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Paul C. Rizzo Associates, Inc.
CONSULTANTS

Phase I Site Investigation Report

Volume I Text, Tables, Figures and Appendices A through D

Phase I Study Area Investigation

Pulverizing Services Site
Moorestown, New Jersey

PPG Industries, Inc.
Pittsburgh, Pennsylvania

Revision 1

300240

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PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

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REPORT
PHASE I - SITE INVESTIGATION
PULVERIZING SERVICES SITE
MOORESTOWN. NEW JERSEY

1.0 INTRODUCTION

PPG Industries, Inc. (PPG) submits this revised Draft Phase I Site Investigation Report (SIR) for the Phase I Study Area investigation at the Pulverizing Services Site in Moorestown, New Jersey. This report has been prepared by Paul C. Rizzo Associates in accordance with the Administrative Order on Consent (Order) issued to PPG by the United States Environmental Protection Agency (USEPA) and dated March 31, 1989 (II-CERCLA-80109).

1.1 PURPOSE OF THIS REPORT

This report documents the Phase I Site Investigation which was performed pursuant to the Removal Order. This phase of the investigation focused on the main plant area (Area A) and consisted of implementing the USEPA approved Phase I Site Operation Plan. The objective of this study was to collect data to assess potential removal actions. The Phase I Site Investigation Report was submitted to the USEPA on May 25, 1990 in accordance with the Order.

The Phase II Site Operations Plan (SOP) was prepared to address other areas of the site (Areas B and C) and to further define Area A contamination. This SOP was submitted to the USEPA on April 16, 1990 in accordance with the Order. The original intent of this phased investigation was to proceed quickly toward a response action at Area A (presumed to contain the most potential contamination) and then proceed at a later date on Areas B and C.

The USEPA provided comments on both the Draft Phase I SIR and the Draft Phase II SOP in a letter to PPG dated January 28, 1993. After a meeting between PPG and the

USEPA on February 12, 1993, PPG and the agency mutually agreed to combine the Phase I SIR and the Phase II SOP into one document. This document will still reflect the language of the Order (ie. Phase I and Phase II) but will eliminate redundancy. This revised Draft Phase I Site Investigation Report incorporates USEPA comments on the Draft SIR and Draft Phase II SOP. This format of a combined document is consistent with PPG's meeting with the USEPA on February 12, 1993.

1.2 PROJECT BACKGROUND

The Pulverizing Services Site is a former pesticide formulating facility that operated from about 1935 to 1977. The New Jersey Department of Environmental Protection and Energy (NJDEPE) began investigating the facility in 1985. USEPA began investigating in 1987. The site is divided into two study areas. The Phase I Study Area is primarily near the production buildings on the north side of New Albany Road. The remainder of the property is the Phase II Study Area.

The Phase I Study Area, as defined in the Order, includes all suspected disposal areas at the Pulverizing Services Site where previous USEPA sampling has indicated the presence of dichloro-diphenyl compounds (DDD, DDE, and DDT) at concentrations in excess of 100 mg/kg or other areas of suspected disposal, as determined from a geophysical survey.

The Scope of Work for the Phase I Study Area includes sampling of soil borings and the installation of monitoring wells in order to evaluate the extent of contamination at the site. The Scope of Work also includes a geophysical investigation to supplement the results of a ground-penetrating radar (GPR) survey which was previously performed at the site.

The Phase I Study Area Investigation has been performed in two stages. An initial Phase I Site Operations Plan was prepared by PPG and submitted to USEPA on May 22, 1989. Following approval of this plan by the USEPA, electromagnetic (EM) and magnetic geophysical surveys were conducted at the site. The purpose of doing this work prior to the geotechnical and groundwater sampling was to more accurately locate borings and monitoring wells with respect to areas of contamination at the site.

Based on the results of the geophysical surveys, boring and well locations were chosen, and a Draft Phase I Site Operations Plan (SOP) and a Draft Quality Assurance/Quality Control (QA/QC) Plan were submitted to the USEPA on June 19, 1989. Following review and comment by the USEPA, these documents were revised to final versions and verbal authorization to initiate site work was given by the USEPA in November 1989.

1.3 REPORT ORGANIZATION

Section 2.0 provides a description and history of the site, and a brief summary of data existing prior to the current investigation. The results of the geophysical surveys performed in June 1989 and a comparison of these results to the previous GPR survey are provided in Section 3.0. Soil, sediment, and groundwater sampling procedures and results are also provided in Section 3.0.

Site surface and subsurface conditions, and hydrogeology are discussed in Section 4.0. A preliminary engineering evaluation and cost analysis are presented in Section 5.0.

The proposed Phase II Investigation Scope of Work is presented in Section 6.0. Phase II research activities are discussed.

Section 7.0 provides a schedule, and the report is summarized in Section 8.0.

2.0 SITE HISTORY AND SUMMARY OF EXISTING DATA

2.1 SITE DESCRIPTION AND HISTORY

The Pulverizing Services Site is located in an Industrial Park at 332 New Albany Road in Moorestown, Burlington County, New Jersey (Figure 1). Based upon former tax maps, three parcels comprise the site. Each parcel has an area of approximately eight acres. Two of the parcels (Areas A and C) are located on the northwest side of New Albany Road, while the third (Area B) lies almost directly across New Albany Road. A plan of the site is shown on Figure 2.

The Pulverizing Services Site is an inactive facility which formerly formulated pesticides. The plant commenced operations about 1935. The plant was originally operated by the International Pulverizing Company. In 1946, this firm was sold to the Micronizer Company, a subsidiary of Freeport Sulfur Company. PPG purchased this firm in 1948. PPG operated the plant until 1963 when it was sold to Pulverizing Services, Inc. This firm, which was headed by the former PPG plant manager, operated on the site until January 1979 when it ceased operation at the site because of labor problems.

Industrial activities involving pesticide grinding, micronizing, and blending first occurred at the site in 1935. Initially, inorganic pesticides such as lead arsenate, calcium arsenate, sulfur, and tetrasodiumpyrophosphate predominated. In later years, organic pesticides such as dichlorodiphenyl trichloroethene (DDT), aldrin, malathion, dieldrin, lindane, rotenone, and n-methyl carbamates (Sevin, also referred to as Carbaryl), were formulated. The active pesticide ingredients were not actually manufactured at the site. Rather, the active ingredients were brought to the site, then ground, blended, and packaged for distribution under the labels of various companies.

Based upon several interviews of past Pulverizing Services employees (NJDEPE, 1986), the activities occuring in or on site buildings or features are listed below :

Building No.	Building Description
29	Warehouse
3	Process Area
4	Process Area
5	Main Process Area
6	Warehouse
20	Compressor Building
30	Employee Services

Sulfur piles were previously located where paved areas are currently located in front of Buildings 5 and 6.

PPG owned and operated the site from about December 30, 1948 until about November 29, 1963. During the 1950s and early 1960s, waste is reported to have been disposed behind the main production buildings (landfill area) in several trenches (USEPA, 1988).

In April 1985, the NJDEPE initiated enforcement action against Pulverizing Services, Inc. Samples were taken in 1986 confirming soil contamination. In June 1987, NJDEPE issued an Administrative Order against PPG. During the fall of 1987, the USEPA collected a substantial number of soil samples and performed a GPR survey. Late in 1987, USEPA took over the lead-agency role at the site. An Administrative Order on Consent was entered into by the USEPA and PPG for implementation of security fencing at the site in May 1988. On March 31, 1989, USEPA and PPG entered into the Order for the performance of a site investigation and engineering evaluation/cost analysis of potential response actions at the site.

2.2 SUMMARY OF PREVIOUS DATA

In April 1986, the site was sampled by a team from NJDEPE. Samples were obtained of surface soils, stream sediment, floor sweepings from a building, and a building floor drain. Various pesticides and organic compounds were detected. NJDEPE documented the

presence of pesticides in the soil from the landfill area. Compounds identified by the NJDEPE analysis were DDT, DDD, and alpha BHC.

In October 1987, the USEPA Technical Assistance Team (TAT) conducted sampling at the site. According to a sampling report, various pesticides and organics were detected including DDD, DDE, and DDT (USEPA, 1987).

Soil sampling and analysis performed by USEPA TAT verified the NJDEPE results and revealed widespread occurrences of pesticides in Area A at the site (Figure 3). Areas which, based upon historical photographs and records, were believed not to have been used by the facility (Areas B and C) had pesticide concentrations in soil up to 110 mg/kg. Pesticide concentrations of up to 2,400 mg/kg were identified in the landfill area (Area A). Analysis revealed the presence of various pesticides, including DDT, DDD, DDE, alpha BHC, lindane, methoxychlor, heptachlor, and others. The most common and abundant pesticide identified was DDT. DDD and DDE, slightly less common, were often found with DDT (USEPA, 1987).

Site tranformers were sampled and found to have PCB concentrations less than 50 ppm. Site underground storage tanks did not contain PCBs.

The USEPA TAT investigated possible off-site migration. A small, drainage ditch which originates at the site and flows northwest into a storm sewer that eventually discharges to Pennsauken Creek is a potential pathway for off-site migration of pesticides. It should be noted that this stream is really a constructed drainage ditch and was mislabeled as a stream during initial sampling events. A water sample taken from the ditch along the west boundary of Area C revealed low levels of alpha BHC (20 µg/l) and lindane (21 µg/l). A sediment sample from the same location showed DDT (10 mg/kg) and DDD (27 mg/kg). A sample of runoff from Area B indicated the presence of DDT (3 µg/l). A soil sample taken in front of a berm near the property line northeast of Building 29 had concentrations of DDT (2,300 mg/kg) and DDD (53 mg/kg) (USEPA, 1987).

The USEPA Environmental Response Team (ERT) performed a ground penetrating (GPR) study and obtained soil samples for analysis in December 1987. The soil samples were collected at 14 locations suggested by dead vegetation, GPR anomalies, and visible

wastes. Samples were obtained at the surface and at some locations at depths of one, three, and five feet (USEPA, 1988).

The soil samples taken by the ERT contained DDT and its breakdown products, as well as arsenic and sulfur. The sulfur was found to be non-reactive and not a hazard. These other compounds were found at high concentrations in surface and one-foot deep samples. Significant concentrations of the contaminants were found in deeper samples at two locations, indicating the mixing that may have occurred during trench disposal of these wastes (USEPA, 1988).

The GPR study indicated numerous areas of disturbance north and northwest of Building 29 which are apparently trenches used for disposal of pesticide wastes and other materials associated with site operations (Figure 4). The distribution of waste has also been evaluated on the basis of historical aerial photographs under a USEPA contract (USEPA, 1988). Areas where the ground has been disturbed and where waste may have been buried are shown on Figure 5.

In July 1991, the New Jersey Department of Transportation (NJDOT) sampled soil along New Albany Road as part of a stormwater construction project. The draft data from this sampling event indicate total pesticide concentrations from 2.0 to 92.7 ppm. The sampling also indicated petroleum odors in the area of their culvert discharge to the ditch along the railroad tracks in Area B.

Appendix A contains summary tables of available previous data and available sample location maps.

3.0 PHASE I FIELD INVESTIGATION

A geophysical survey was performed by Paul C. Rizzo Associates, primarily in the Phase I Study Area, during June 5-8, 1989. The results of this survey were used to plan the Phase I Investigation. Phase I site activities commenced on December 4, 1989 with the construction of a decontamination pad near the northern end of Area A and a gravel road from the decontamination pad to the site entrance gate at Crider Avenue (Figure 6). Trailers and a portable toilet were also placed near the Crider Avenue gate.

Drilling and sampling activities were initiated at the site on December 11, 1989. The drilling was performed by John Mathes and Associates of Windsor, New Jersey. The field work continued to December 21, 1989. Following a holiday break, work resumed on January 2, 1990. All drilling and sampling activities included in the Final Phase I SOP (Paul C. Rizzo Associates, 1989) were completed by January 10, 1990, and drilling equipment was demobilized from the site at that time.

Lancaster Laboratories, Inc., located in Lancaster, Pennsylvania, performed all chemical analyses except for dioxin. Dioxin analyses were performed by Environmental Engineers of St. Louis, Missouri.

3.1 GEOPHYSICAL SURVEYS

Two geophysical techniques have been employed as a part of this investigation to determine the possible presence of buried waste at the Pulverizing Services Site. One technique utilized a magnetometer in order to measure variations of the earth's magnetic field due to the influence of metal; the other technique employed the electromagnetic (EM) method to measure variations of bulk ground conductivity that may be related either to buried metal or to nonmetallic contamination. The primary method for investigating for buried drums was by means of the magnetometer. The EM equipment is less sensitive to the presence of metal, but has the potential for detecting non-metallic waste or buried waste in situations where drums may have rusted out and are not detectable by the magnetometer.

Both geophysical methods were interpreted by means of contouring field measurements which were taken on a grid. Areas where the geophysical properties of the ground vary from normal values are referred to as anomalies. The presence of an anomaly does not necessarily imply the presence of waste, as other conditions may exist which could produce the same geophysical signature. At the Pulverizing Services Site, considerable effort was expended to remove or document the influence of visible forms of cultural interference such as buildings, fences, power lines, and metal objects lying on the surface or partially embedded.

Although several types of magnetometers are available, the one most commonly used is a proton precession magnetometer which measures the total magnetic field. The proton precession magnetometer utilizes the precession of spinning protons, or nuclei of the hydrogen atom, in a volume of hydrocarbon fluid to measure the total magnetic intensity.

3.1.1 Magnetics Theory and Equipment

The earth has a magnetic field which acts as if its axis is represented by a bar magnet with its north pole at the top of the globe. At any point on the earth's surface, the magnetic field can be characterized by direction and intensity. Direction is typically measured with an instrument like a compass and intensity is measured with a magnetometer. The unit of intensity is the gamma and is defined in terms of the force that a magnetic field will place on a standard magnet. The earth's natural field is approximately 54,500 gammas when measured in the northeastern United States. Differences from the normal value of the earth's magnetic field correspond to magnetic anomalies which can be measured by a magnetometer. In general, the intensity of the measured anomaly is a function of:

- Mass of the material;
- Magnetic susceptibility; and
- Depth of burial.

Metallic objects such as drums and scrap metal containing iron or steel have high magnetic susceptibility and, when found in sufficient mass and/or close to the surface, can cause large scale anomalies in relationship to the earth's field. Figure 7 provides the total field magnetometer response for different target distances and masses. A single 55-gallon drum

at a depth of about six feet would be expected to produce an anomaly of about 150 gammas. Large numbers of drums could produce anomalies of several thousand gammas. However, it should be noted that other buried metallic objects could produce a response similar to buried drums.

The spinning protons in decane (or kerosene, alcohol, etc.) behave as small, spinning magnetic dipoles. These small magnets are temporarily aligned when a current is applied to the sensor. When the current is removed from the sensor, the spinning nature of the protons causes them to precess about the earth's magnetic field in the same manner that a spinning top precesses about the earth's gravitational field. The precessing protons generate a small signal in the magnetometer sensor coil, the frequency of which is precisely proportional to the total magnetic field intensity. The MKS units of conductivity are the mho per meter or, as is conventionally stated, millimho per meter (mmho/m). Conductivity values of typical natural ground materials are presented on Figure 8.

The total magnetic field intensity as measured by a proton precession magnetometer is the magnitude of the earth's field independent of its direction. A total field magnetometer provides a significant advantage over other instruments in measuring asymmetric anomalies and in the interpretation of anomalies. Furthermore, the quantity that is measured is more or less independent of the orientation of the sensor and allows the magnetometer to be operated without attention to precise leveling.

The proton precession magnetometer used for the site survey was the EG&G Model 856. This unit has the advantages of being lightweight and having an accuracy of one-tenth of a gamma. This equipment has a direct digital readout and internal recording capability.

3.1.2 Electromagnetics (EM) Theory and Equipment

EM equipment consists of transmitter and receiver coils, which are physically separated by a fixed distance. An alternating current in the transmitter coil produces a time varying, audio-frequency, EM field which induces very small currents in the subsurface. These currents generate a secondary EM field which, along with the primary field, is detected by the receiver coil. The strength of the secondary EM field is a function of the intercoil spacing, the transmitter frequency, and the ground conductivity. If the frequency of the

transmitter is designed to be compatible with the intercoil spacing, the ratio of the secondary to the primary magnetic field becomes linearly proportional to the terrain conductivity. This fact makes it possible to construct the direct reading linear terrain conductivity meter used in this study.

The EM unit used in this study was the EM 31D manufactured by Geonics Limited. The EM 31D is a portable unit which can be operated by one person, and it provides a direct readout of conductivity to an accuracy of about 5 percent at 20 mmho/m ground conductivity. The coil separation is 12 feet and the transmitter has an operating frequency of 9.8 kilohertz. The EM 31D, when used at the normal vertical dipole position, is designed to be most sensitive to conductivity changes near the surface and the contribution of the ground from depths greater than 20 feet is only about 30 percent of the total signal.

3.1.3 Geophysical Survey Field Operations

Field operations were initiated on June 5, 1989. A 20-foot survey grid was established in the Phase I Study Area (Figure 9). Both EM and magnetic measurements were made at the survey stations (grid points). The initial geophysical survey was conducted on June 6 and 7, 1989. The results were plotted in the field using the Surfer computer software and interpreted and reviewed in the field on June 8, 1989 in a meeting held at the site among the Paul C. Rizzo Associates geophysicist and field crew, a representative of PPG, and the USEPA On-Scene Coordinator.

Based on discussions held on June 8, 1989, additional surveying was conducted in Area C adjacent to Area A to define the western limits of the anomalies indicated in Area A. Measurements were made in the area of exposed soil northeast of Building 29 to determine if buried drums might be present in that location. Walking traverses with the EM equipment were also made across all of Area B and Area C.

Magnetic measurements were repeated at a base station a minimum of twice a day to assure repeatability of measurements and to determine the diurnal correction caused by the natural drift of the earth's magnetic field. This drift proved to be negligible. The EM

measurements were also repeated at stations previously measured in order to verify equipment calibration. EM measurements also proved to be repeatable.

Careful attention was paid to removing obvious forms of interference such as scrap metal prior to making a geophysical measurement. Where sources of metal could not be removed, they were documented in the field notes so that any effects on the measurements could be accounted for in the interpretation.

3.1.4 Magnetic Results

The contour map of magnetic intensity (Figure 10) indicates the presence of disseminated metal across much of the site. The major anomalies are as follows:

- X = 40; Y = 200 - In this large anomaly, values are about 2,500 gammas above normal. Drums can be observed in this area. Many drums (possibly in excess of 100) or large amounts of metal should be required to produce an anomaly of this magnitude.

- Building 29 - As this building is metallic, it significantly affects the magnetometer, causing readings to be anomalously low north of the buildings.

- The entire area of bare ground northeast of Building 29 is chaotic. Metal is certainly present, but the magnetic signature is confused by the location of this area in the magnetic "shadow" of Building 29, which causes the readings to be anomalously low.

- X = 380; Y = 100 - In this area, the magnetic high corresponds to partially buried drums.

- Minor anomalies indicative of smaller amounts of buried metal are present at other locations shown on Figure 10.

3.1.5 EM Results

Numerous EM anomalies are visible on the contour map of bulk ground conductivity (Figure 11). The presence of metal does affect some of the readings, in particular those taken along the northeast fence and immediately adjacent to the buildings. Away from these areas, metal may also have affected readings in a linear zone northeast of Building 29. In this area, negative conductivities were observed, which is usually indicative of metal. Smaller anomalies, which could be due to buried metal, are also present west of Building 29.

Ground conductivity values of 40 millimhos per meter and higher appear to be related to buried waste. In some areas, conductivity values are in excess of 60 millimhos per meter, and these areas appear to be zones where waste is most concentrated. The anomalies northwest of Building 29 appear to be related to buried waste identified on historical aerial photographs. An anomalous zone along the western fence is of unknown origin, but is probably not due to the fence.

The area surrounding the small stream exiting the site in a westerly direction exhibits an anomalously high ground conductivity. It is not known if these high conductivities relate to off-site contaminant migration or if they simply indicate increased soil saturation.

3.1.6 Previous GPR Study Results

A ground-penetrating radar survey was previously conducted at the site by a USEPA subcontractor. Raw data records from this survey are not available, but areas of GPR anomalies from this survey are indicated on Figure 4. As can be seen from the figure, the areas of GPR anomalies generally correlate with anomalies from the EM and magnetometer surveys. In particular, the area of buried drums indicated by the magnetometer survey shows up clearly on the GPR survey results. Also, the large area of trenches and disturbance observed in the GPR survey correlates well with the area of high EM contours. Other areas of GPR anomalies can also be correlated to anomalies from the EM and magnetometer surveys. These anomalies also correlate with historical photographs of the site.

3.2 GENERAL FIELD AND SAMPLE-HANDLING PROCEDURES

3.2.1 Health and Safety Procedures

All work at the site was performed in accordance with a site-specific health and safety plan which was prepared as part of the Phase I SOP. Prior to initiation of drilling activities, a training session was conducted by a Paul C. Rizzo Associates industrial hygienist. The following topics were included in the discussion:

- Site history;
- Compounds identified on site;
- Explanation of acute and chronic effects of toxic chemicals identified at the site;
- Site requirements for personnel protection (respiratory, etc.), effectiveness, and limitations;
- Prohibited actions or procedures in designated work zones;
- Safety precautions and buddy system;
- Accident preventive procedures;
- Decontamination procedures;
- Work zones and site control procedures;
- Health and safety personnel and organization;
- Air monitoring program; and
- Symptoms and treatment of heat-related illness.

During drilling, sampling, and monitoring well installation activities, the following protective gear was worn:

- Hooded PVC or Saran Tyvek coverall;
- Nitrile outer gloves;
- Latex inner gloves; Full-face, air-purifying respirator with high efficiency cartridges suitable for pesticide exposure; and
- Hard hat.

When leaving exclusion zone areas, personnel passed through a decontamination station consisting of the following:

- Boot and glove wash/rinse;
- Removal of disposable clothing;
- Hard hat and respirator wash/rinse; and
- Hands and face wash.

Disposable protective gear items were collected and stored in drums at the site.

During the course of the field work at the site there were no accidents or safety related incidents.

3.2.2 Equipment Decontamination

Drilling rigs and related equipment were decontaminated on a specially constructed pad located along the northern side of Area A (Figure 6). Construction of the pad is described in Section 3.3.

Drilling rigs and associated equipment were decontaminated prior to the drilling of each boring and/or monitoring well. Waste water from the decontamination process was collected in two, 1600-gallon tanks.

3.2.3 Sample Handling/Chain-of-Custody

The samples collected at the site were placed in containers supplied by the analytical laboratory (Lancaster Laboratories, Inc.), as specified in the QA/QC Plan. The laboratory containers were obtained from I-Chem and preservatives, as appropriate, were placed in the containers by the laboratory.

All sample containers were labeled, and the labels were completed by Paul C. Rizzo Associates personnel at the time of collection. Information marked on the labels included the following:

- Sample identification number;
- Collector's name;
- Date of collection;
- Type of sample;
- Preservatives used;
- Analysis to be performed; and
- Number of bottles in sample set.

Samples were iced (4°C) for preservation after collection. The samples were picked up by the analytical laboratory within two days of collection. A trip blank for volatile organic compounds was part of each sample shipment. A chain-of-custody record also accompanied each sample shipment. The chain-of-custody forms indicated the following information:

- Name of sampler;
- Sample identification;
- Data and time collected;
- Amount collected; and
- Containers used.

At each change of possession, the chain-of-custody record was signed by the person receiving the samples and the person relinquishing the samples.

3.2.4 Documentation

Each day that work was performed at the site, a Field Activity Daily Log was completed by the field personnel. The following information was noted on the logs, as appropriate:

- Field activity subject;
- General work activity;
- Unusual events;
- Changes to plans and specifications;
- Visitors on site;
- Subcontractor progress or problems;
- Communication with PPG or others;
- Weather conditions;

- Personnel on site; and
- Field reagents used.

For each boring, a geotechnical log describing the soil type and consistency, penetration resistance, and other data was generated. The logs for the site borings are provided in Appendix B.

For each monitoring well installed, the details of construction were noted; these installation details for the site monitoring wells are provided in Appendix C.

Chain-of-Custody documentation for the samples obtained from the site was as described in Section 3.2.3. Completed chain-of-custody records for the project are provided in Appendix D.

3.2.5 Quality Assurance Audits

An internal audit of field operations was conducted by Paul C. Rizzo Associates on December 5, 1989. There were no adverse findings and the work was found to be in compliance with the approved work plans. Documentation of the audit was filed with the project records.

An external audit of the field operations was conducted by the USEPA on January 9, 1990. Only minor comments were made by the USEPA auditors.

An EPA TAT representative was present during nearly all field activities and obtained split samples on several occasions.

3.3 Site Setup, Drilling, and Well Installation

Site setup activities were initiated on December 4, 1989, with the construction of an access road. Access to the site for the Phase I work was from Crider Avenue (Figure 6). The access road was constructed from the gate on Crider Avenue across Area C approximately 500 feet into the site. Office and storage trailers, parking areas, and a portable toilet were established along the access road near the entrance gate.

At the end of the access road, a decontamination pad was constructed. The decontamination pad consisted of a graded sand base overlaid by 20-mil PVC liner. The pad was approximately 15 feet by 30 feet in area, with 4-foot high plywood sidewalks. The bottom was graded to a low spot in the center where decontamination fluids were collected. The liner on the bottom of the decontamination pad was covered with plywood to protect it from damage due to the wheels of the drilling equipment. Stone entrance and exit ramps were constructed to facilitate vehicle access. An electric utility/sump pump was used to transfer the collected decontamination water to adjacent storage tanks.

Drilling and sampling operations commenced on December 11, 1989. Borings were advanced with a Diedrich D-50 truck-mounted drill during the period from December 11 to December 21, 1989. The weather during this period was extremely cold which allowed good access to boring sites but caused difficult working conditions. The cold weather contributed to equipment problems and made decontamination of equipment difficult due to freezing water. Field work was suspended for the Christmas-New Year holiday period on December 21, 1989.

The weather warmed substantially after the holiday break, causing soft ground conditions. Drilling resumed on January 2, 1990 and a CME-55 drill mounted on an all-terrain vehicle (ATV) was used for the drilling. The ATV rig had balloon tires and had no trouble gaining access to drill sites. On January 10, 1990, field activities were completed, equipment was demobilized, and the site was secured.

Twenty-two borings were drilled during Phase I site investigation. Twenty of the borings (B-l through B-20) were sampled for analytical testing, and two (B-21 and B-22) were drilled only for well installation. All of the borings were sampled during advancement using Standard Penetration Test (SPT) techniques on 2.5-foot centers. These samples were visually logged by the Paul C. Rizzo Associates field personnel. The boring logs are provided in Appendix B.

Borings in which monitoring wells were installed were drilled with 6 ¼ inch ID hollow stem augers. The remaining borings were drilled using 4¼ inch ID hollow stem augers. All of the borings except Boring B-18 were terminated at the top of the Marl. The Marl is

a stiff gray-black clay which underlies the entire site (Section 4.0). Boring B-18 was advanced through the Marl in order to estimate its overall thickness (approximately 22 feet).

All cuttings generated as a result of drilling were collected in drums and staged at the site. Upon completion, the borings not used for well installation were tremie grouted to the surface with a cement-bentonite grout slurry. The grout was mixed in the following approximate proportions:

- One 94-pound bag Portland Type IA cement;
- Seven gallons water; and
- Five pounds powdered bentonite.

Six monitoring wells were installed in the shallow aquifer at the site. The well borings were terminated at the top of the Marl. The borings were drilled using 6 ¼ inch ID hollow-stem augers to allow installation of the well materials through the augers. The monitoring wells consisted of two-inch ID PVC screens and riser pipe which were steam cleaned prior to installation. The annulus between the borehole and the screened section was backfilled with a sand filter pack to a point above the screen. A bentonite seal was placed above the filter pack, and the borehole was grouted to the surface. For protection, a locking steel protective casing was placed over the well and embedded in the grout. Monitoring well installation details are provided in Appendix C.

3.4 SOIL SAMPLING

Soil sampling methodology and the results of laboratory analysis are provided in the following subsections. The results of the laboratory analysis for soil and all other types of samples, as received from the laboratory, are provided in Appendix E. Upon completion of the sample analysis, the data were validated in accordance with the Project Quality Assurance/Quality Control Plan. Data validation check sheets are provided in Appendix F, and chain-of-custody records are presented in Appendix D.

3.4.1 Boring Soil Samples

3.4.1.1 Sampling Procedures

Soil samples were collected 20 borings using SPT techniques and a sample interval of 2.5 feet. All samples were classified as to lithology by an experienced engineer in accordacne with the Unified Soil Classification System; samples were collected for chemical analysis from pre-determined levels in Borings B-l through B-20 (Figure 12). Samples for analysis were generally obtained at shallow, intermediate, and deep levels corresponding to the following depths below the surface:

- Shallow - 0 to 2 feet;
- Intermediate - 5 to 7 feet; and
- Deep - 10 to 12 feet.

Shallow soil samples were not obtained in areas of previously identified surface contamination, in order to avoid duplication of effort. The soil samples obtained and the analyses performed are indicated in Table 1. It should be noted that a few samples were obtained at slightly different depth intervals than those indicated above (ie. 4 to 7 or 5 to 6.5 feet). Actual depths are indicated on the boring logs (Appendix B) and the analytical summary tables in Appendix E.

The split-barrel samplers which were used to collect soil samples for laboratory analysis were decontaminated prior to each use as described in the QA/QC Plan. After air drying, the samplers were assembled and wrapped in foil to protect them from contamination.

The volume of soil for each sample was calculated based upon the number of analytical parameters and the need to split samples with USEPA. Samples from borings B-1, B-6, B-7, B-8, B-11, B-16, B-19, and B-20 were split with the USEPA. Samples for which large volumes were required were collected using a 3-inch diameter by 18-inch long sampler. The smaller sampler size was 1.5-inch diameter by 24-inch long. The samples were transferred from the sampler to a decontaminated stainless-steel mixing bowl or tray after the portion for volatile organic analysis was removed and placed in the appropriate

container. The remainder of the sample was thoroughly mixed in the bowl prior to filling of the remaining sample jars.

3.4.1.2 Results of Laboratory Analysis

The analytical results for the pesticide compounds most frequently detected in boring soil samples obtained from the site are presented in Tables 2 through 6. Duplicate results, where available, are also presented. The results are also indicated on Figures 13 through 14. Contours of analyte concentrations are not presented on the figures, as there are insufficient data to provide meaningful results.

Some additional analytes encountered are listed in Table 7. Acetone was frequently detected, but this is likely the result of the decontamination procedures (which involved the use of acetone) and the cold temperatures (low evaporation). Acetone was also detected in the trip blanks. The soil samples had relatively high concentrations of aluminum and iron, but this was general for all samples and is believed to be a natural characteristic of site soils. Lead and arsenic concentrations are low and also appear to be within natural levels (Adriano) (Appendix E).

The combined concentrations of DDD, DDE, and DDT in soil samples are presented in Table 2. The results are also shown on a site plan (Figure 13). Shallow samples from Borings B-2 and B-3 were above 100 mg/kg, but the shallow samples adjacent to Area C (from Borings B-16, 17, and 18) were 1.63 mg/kg or less. The intermediate-depth samples with concentrations greater than 100 mg/kg were from Borings B-6 and B-12; these were 470 and 215 mg/kg, respectively. It should be noted that Boring B-6 was the location of the highest contours from the EM geophysical survey. None of the deep samples had concentrations greater than 100 mg/kg.

The combined concentrations of alpha, beta, gamma and delta BHC in soil samples are provided in Table 3. The results are also shown on Figure 14. The highest concentration was in the intermediate depth sample from Boring B-6 (23 mg/kg). Other values are lower and more than half of the samples were ND for all four compounds.

Concentrations of Sevin detected in the soil samples from the site are presented in Table 4 and are shown in plan view on Figure 14. As with the previous compounds, the highest level (19 mg/kg) was found at intermediate depth in Boring B-6. Sevin was detected four times at concentrations greater than 4.5 mg/kg in deep samples. It is believed that this apparent mobility is the result of the relatively high solubility in water (40 mg/l at 30°C) of Sevin (Vershueren, 1983).

Aldrin was detected only twice in soil samples from the site. The highest level was 6.9 mg/kg at intermediate depth in Boring B-6 (Table 5). Dieldrin was detected 15 times in the 46 soil samples which were analyzed for this compound (Table 6). Dieldrin concentrations are indicated in plan view on Figure 14. The highest concentration occurred at intermediate depth in Boring B-6 (63.9 mg/kg). Values of 3.1 and 4.1 mg/kg were reported at shallow depth in Borings B-2 and B-3, respectively. Dioxin, malathion, and pentachloronitrobenzene (PCNB) were not detected in any soil samples obtained from the site.

3.4.2 Surface Soil Samples

3.4.2.1 Sampling Procedures

Four surface soil samples were collected from Area B in the vicinity of the garage near Boring B-20 (Figure 15). The samples were collected from locations which were approved in the field by the USEPA. A hole was dug with a shovel to a depth of approximately eight inches. A clean, decontaminated stainless-steel trowel was used to collect the sample. A sample of the soil was collected for volatile organic analysis. An additional sample was collected and thoroughly mixed in the hole; this material was used to fill the remaining sample jars. Each sample location was marked by a stake. After sampling, the trowels and shovel were decontaminated in accordance with procedures in the Project QA/QC Plan.

3.4.2.2 Results of Laboratory Analysis

Results of surface soil sampling near Boring B-20 in Area B are provided in Table 8. DDT concentrations of 27,200 mg/kg and 1,300 mg/kg were found in Samples SS-3 and

SS-4, respectively. DDD was reported in SS-3 at a concentration of 1,940 mg/kg but DDD in the duplicate analysis was not detected at 300 mg/kg. DDE was reported in SS-4 at a concentration of 226 mg/kg but DDE was not detected in the duplicate analysis at a detection limit of 36 mg/kg. Relatively low concentrations of DDT (2.71 and 23.4 mg/kg) were detected in Samples SS-1 and SS-2, respectively. Sample SS-l also contained DDE and BHC.

3.5 SEDIMENT SAMPLING

3.5.1 Sampling Procedures

One sediment sample was collected from the ditch which flows northwest from the area of investigation. This sample was taken at a point near Boring B-l9 (Figure 12). It was collected with a stainless-steel trowel and placed into a stainless-steel pan. After the volatile organic sample container was filled, the remaining sample was mixed and quartered, each quarter was mixed individually, and then the entire sample was remixed and the remaining sample jars were filled. The location where the sediment sample was obtained was marked with a stake.

Laboratory analysis for the sediment sample was for the full TCL plus Sevin, malathion, PCNB, and dioxin.

3.5.2 Results of Laboratory Analysis

The compounds detected in the sediment sample obtained from the ditch near Boring B-l9 are indicated in Table 9. The highest concentration was 21.2 mg/kg of DDD; DDE and DDT were not detected. Malathion was detected at 0.15 mg/kg. Dioxin, Sevin and PCNB were not detected. Phenol was detected at 1.17 mg/kg. Benzene, chlorobenzene, ethylbenzene, xylenes, and tetrachloroethene were also detected at low levels. Low levels of some tentatively identified compound (TIC) hydrocarbons were also detected.

3.6 GROUNDWATER SAMPLING

3.6.1 Sampling Procedures

Following installation, the monitoring wells were developed by alternately surging and pumping. The surging loosened fine-grained soil particles in the filter pack, and the pumping removed the particles from the well. Well development improved the groundwater flow into the well and also served to purge stagnant water from the well prior to collection of groundwater samples.

All equipment used in developing and purging the wells was steam cleaned prior to use. A surface centrifugal pump was used for purging the wells. Suction hoses were dedicated to a single well to minimize the potential for cross contamination.

Conductivity and pH were measured during the well purging to verify the consistently representative quality of the water being removed. All development and purged water was collected in drums and stored on site.

Wells were sampled immediately after purging was completed. Samples were collected using a stainless-steel, bottom-loading bailer which was lowered into the well and removed. The sample was then transferred to the appropriate bottles, and field measurements were taken for temperature, pH, and specific conductance.

Sample collection log forms were filled out in the field. At the field office, one liter of the sample was filtered for metals analysis, and the samples preserved as required. The samples were placed on ice and packaged in coolers for transportation to the laboratory. Custody seals were placed on all sample containers so that the security of the samples could be verified.

Groundwater samples were analyzed for the full TCL plus Sevin, malathion, and PCNB. Metals analysis was conducted on both filtered and unfiltered samples.

3.6.2 Results of Laboratory Analysis

3.6.2.1 Well MW-1

Well MW-1 is located near the eastern entrance to Area A from New Albany Road (Figure 12). The only organic compound detected in the groundwater sample from this well was acetone (Table 10). However, this solvent was detected in the Trip Blank and used for decontamination purposes at the site. Acetone mixes readily with water and the cold temperature during December and January made air drying difficult.

3.6.2.2 Well MW-2

Well MW-2 is located west of Well MW-1 (Figure 12), approximately the same distance from New Albany Road as Well MW-1. Several pesticides were detected in this well (Table 10), most notably Sevin at 152 μg/l. Malathion was also detected at 22 μg/l. Alpha and gamma BHC were detected at 4.0 and 3.0 μg/l, respectively. DDT was detected at 0.10 μg/l.

Three volatile and semivolatile organic compounds were also detected (Table 12). These included xylenes (25 μg/l), naphthalene (122 μg/l), and 2-methyl-naphthalene (290 μg/l).

The following inorganics were detected which exceed MCLs:

	Concentration mg/l	MCL mg/l
• Cadmium	0.01	0.005
• Chromium	0.43	0.1
• Lead	0.068	0.015

Arsenic was measured at the MCL of 0.05 mg/l.

3.6.2.3 Well MW-3

Well MW-3 is located in the paved area along the east side of Area A (Figure 12). BHC compounds, Dieldrin, DDT, and an Endrin ketone were detected in a groundwater sample from this well, as indicated in Table 10. Pesticide concentrations ranged from 0.2 to

1.4 µg/l. Acetone was also detected but this is believed to be a result of the decontamination process, as previously discussed.

3.6.2.4 Well MW-4

Well MW-4 is located along the west side of Area A (Figure 12). The analytical results from a groundwater sample are shown in Table 10. Gamma BHC and Dieldrin were detected in this well at concentrations of less than 1ppm. Also detected was acetone at 120 µg/l (see discussion for Well MW-l) and 4-methyl-2-pentanone (methyl isobutyl ketone) at 25 µg/l.

3.6.2.5 Well MW-5

Well MW-5 is located on the east side of Area A adjacent to Area C (Figure 12). The anlaytical results from a groundwater sample are shown in Table 10. A number of compounds were detected in this well, most notably Sevin at 14,500 µg/l. Other pesticides detected were alpha BHC (84 µg/l), beta BHC (9.0 µg/l) and delta BHC (16 µg/l). A number of hydrocarbons were detected including xylenes (320 µg/l) and nitrobenzene (207 µg/l). There were numerous TICs including l-methyl-ethyl benzene. Also detected were carbon disulfide (91 µg/l) and diethyl phthalate (90 µg/l).

3.6.2.6 Well MW-6

This well is located along the west side of Area A near Area C (Figure 12). Alpha, delta, and gamma BHC were detected in the well at concentrations of 5.0, 0.57, 3.0 µg/l, respectively (Table 10). Sevin was detected at 182 µg/l. Tetrachloroethene (13 µg/l), 4-methyl-2-pentanone (38 µg/l) and endrin ketone (0.2 µg/l) were also detected. Acetone was detected at 63 µg/l, but this is probably an artifact of the sampling procedure.

Cadmium (7 µg/l) was detected at a concentration exceeding the MCL of 5 µg/l.

4.0 SITE CHARACTERIZATION

4.1 SURFACE AND SUBSURFACE CONDITIONS

Area A of the Pulverizing Services Site is located on a local topographic high with no natural continuous flowing streams within the property boundary. A small drainage ditch flows from the northwest corner of the production facilities to the western boundary and northerly to Pennsauken Creek. Because of surface soil contamination, there is some potential for migration of contaminants through the air. However, most of the site is vegetated and there are only a few places where the surface is bare. Thus, transport of airborne contaminants is not a significant concern in the absence of surface disturbance at the site.

Twenty-two borings were drilled at the site as part of the Phase I Study Area Investigation (Figure 12). Twenty of these (B-l through B-20) were for the purpose of obtaining soil samples, and two additional borings (B-21 and B-22) were drilled for the installation of two monitoring wells which were added to the investigation program. A geotechnical boring log was prepared for each boring, and these are presented in Appendix A.

All of the site borings with the exception of Boring B-18 were drilled to the top of a clay layer (Marl) which underlies the entire site. The Marl was encountered at depths ranging from 7.0 to 27.2 feet. Boring B-18 was drilled through the Marl, which was approximately 22 feet thick at that point.

The depth to the clay was found to be 10 feet or less in the northwest corner of Area A increasing to approximately 27 feet in Boring B-20, which is located across New Albany Road in Area B. In general, the depth to the clay is 20 feet or more in Area A adjacent to New Albany Road. In the area where the burial of contaminants is known to have occurred, the depth ranges from about 7.0 to 15.5 feet.

In general, the soil overlying the clay is granular with lenses of clayey and gravelly material. The gradation ranges from fine to coarse, and density is generally loose to medium dense. Fill material is clearly indicated in Boring B-6 to a depth of 6.4 feet. It

should be noted that the intermediate depth soil sample from this boring was a composite sample from the bottom of the fill and the natural soil immediately below the fill.

4.2 GROUNDWATER CONDITIONS

Six monitoring wells were installed in the shallow aquifer at the site (Figure 12). Details of monitoring well installation are provided in Appendix B.

The water levels observed in the monitoring wells are shown in Table 11. The levels indicate very little gradient; the only clearly defined flow direction is west toward Well MW-6. The water surface elevation in this well is approximately five feet below the levels in the other site monitoring wells. However, the observed water levels are consistent with the area topography, which indicates the site is on a local topographic high, with the most pronounced drainage in the direction of Well MW-6.

The surface aquifer is underlain by an aquitard (the Marl layer) of substantial thickness (approximately 22 feet in Boring B-18). A second aquifer lies under the Marl, but no data were obtained from this aquifer during the Phase I Study Area Investigation. A well will be located in this aquifer during the Phase II Investigation. It appears unlikely that contamination will be detected in this well. A literature review is also planned as part of the Phase II Investigation.

4.3 SITE CONTAMINANTS

Based on the results of the Phase I Study Area Investigation and data from previous investigations, the following preliminary conclusions have been reached regarding the presence of contaminants at the site:

- Surface soils behind the garage in Area B have DDT concentrations in two cases significantly exceeding 100 mg/kg.

- Surficial soils near the buildings in Area A are generally contaminated with greater than 100 mg/kg of DDD, DDE, and DDT (combined concentration).

- In Area A near the locations of Borings B-16, 17, and 18 the surface contamination reduces dramatically to approximately 1.0 mg/kg of DDT.

- Subsurface contamination appears to be at levels of concern along a line extending between Borings B-6 and B12. The samples in this area with concentrations of DDD, DDE, and DDT greater than 100 mg/kg were obtained from intermediate depth (five to seven feet). This is an area where trenches are indicated from historical data. No deep (eight to ten feet) samples yielded combined DDD, DDE, and DDT levels greater than 100 mg/kg.

- Two or three areas of buried metal (possibly drums) are indicated. The most significant is the area near the perimeter fence east of Building 29.

- One or more of alpha, beta, delta, and gamma BHC and Sevin exceed concentrations of 1.0 µg/l in the groundwater at three of the four corners of Area A (north, south, and west). Sevin is the contaminant with highest concentrations in groundwater.

- Volatile and semivolatile organics are present in Wells MW-2, MW-4, MW-5 and MW-6.

- Groundwater appears most contaminated at MW-5 which is the vicinity of the past disposal trenchs.

5.0 PRELIMINARY ENGINEERING EVALUATION/COST ANALYSIS

This section provides a preliminary engineering evaluation and cost analysis of potential response actions which may be applicable to the contamination identified at the site. Since the Pulverizing Services Site is not on the National Priority List and the Order does not require performance of a Remedial Investigation/Feasibility Study, the National Contingency Plan requirements for removal actions provide guidance on the appropriate response actions. The options evaluated address the source of the contamination at the site and not the residual contamination in the groundwater. The extent of contamination in the groundwater will be further characterized during the Phase II Investigation at the site. Also, as part of the Phase II Investigation, additional data will be collected so that waste limits can be more accurately defined.

5.1 POTENTIALLY APPLICABLE RESPONSE ACTIONS

Response actions at the site might be accomplished by a number of means. The potentially applicable response actions can be generally categorized as follows:

- Site and Drainage Controls,
- Encapsulation,
- In-situ Treatment, and
- Removal and Treatment/Disposal.

The no-action alternative will be screened out as a response alternative because the elevated levels of DDT in the surface soil and the proximity of the site to homes and businesses would indicate that some response measure should be considered.

5.1.1 Site and Drainage Controls

Potentially applicable site controls include fences, warning signs, and other security measures. Drainage controls include diversions to limit water from running onto or off of the site. Site controls in the form of a six-foot high fence and warning signs are already in

place at Area A. Given the elevated levels of DDT found in surface soil at Area B, a perimeter fence and warning signs are potentially applicable response actions for this portion of the site.

As mentioned previously, the site is on a topographic high, so runoff control is also a likely response action. Diversion ditches with sedimentation ponds could be employed to reduce contaminant migration potential.

5.1.2 Encapsulation

Encapsulation is a method by which the mobility of contaminants is substantially reduced through engineered controls. For this site, the area of primary contamination would be surrounded by a slurry wall which would be keyed into the Marl that underlies the entire site. The slurry wall would be constructed of a low-permeability, soil-bentonite mixture, and when keyed into the underlying clay, would create a barrier which would minimize potential contaminant migration.

In order to prevent the water table in the enclosed area from rising due to infiltration of precipitation, a low-permeability, engineered cap would be constructed over the entire area enclosed by the slurry wall. The cap would be sloped to promote runoff and would be designed to minimize infiltration through the use of a flexible membrane liner such as high density polyethylene (HDPE), polyvinyl chloride (PVC), or very low density polyethylene (VLDPE).

5.1.3 In-Situ Treatment

A substantial amount of research is being performed in the area of in-situ treatment technologies. One technology which has been applied to wastes similar to those at the Pulverizing Services Site is in-situ vitrification. This technology involves embedding electrodes in the ground and application of high voltages. The soil between the electrodes fuses into a glass-like material. The process creates potentially toxic gases which must be collected and treated. The cost of treatment is in the range of $675 to $1,350 per cubic yard.

In-situ biological treatment is another technology which has potential for future application. At present, however, in-situ biological treatment for pesticides in high concentrations has not been demonstrated outside of laboratory situations. Biological treatment of pesticides has been most successful in laboratory demonstrations involving excavation of contaminated material and treatment in batches in specially-designed reactors.

5.1.4 Excavation and Treatment/Disposal

Removal and treatment/disposal involves excavation of identified areas of highly contaminated soil and treatment either on or off site and/or disposal.

On-site treatment could be accomplished by several technologies such as incineration, solvent extraction, soil washing, or low temperature thermal desorption. The following discussions of onsite treatment and onsite disposal assume that the Corrective Action Management Unit rules are applicable. On-site incineration would raise serious concerns relative to emissions in a suburban locale such as Moorestown and is significantly more expensive than other response alternatives evaluated in this report. Disposal of generated ash would still be a problem.

Solvent extraction has been successfully demonstrated at a number of sites. This technology would entail excavation of the soil and on-site batch treatment in reactors. This treatment methodology has been demonstrated to be effective for pesticides such as DDT, dieldrin, and aldrin. Contaminant reductions as high as 99 percent have been reported for complex organics such as PCBs (Austin, 1989). The treated soil would remain at the site and subsequent treatment/disposal would involve only the solvent carrying the contaminants. Costs are reported to be in the range of $200 to $400 per cubic yard. Although demonstrated at a number of sites, it is not certain that this technology will work at this site. Concerns about use of highly flammable, explosive, or odorous solvents in a suburban setting would need to be addressed through treatability studies.

Soil washing has been successfully demonstrated by USEPA's Superfund Innovative Technology Evaluation Program. For this technology, excavated soils are mixed with

water to form a slurry, which is subjected to a series of intensive scrubbing and physical classification steps to scour contaminants from soil. For pesticide-contaminated soils, removal efficiencies of at least 90 percent are expected. The treated soil would remain at the site. Costs are expected to be in the range of $150 to $200 per cubic yard.

Low temperature thermal desorption is another technology which has been successfully demonstrated at a number of sites. In this process, excavated soils are heated at temperatures up to 800°F, with the contaminated off-gas passed through a carbon adsorption unit or combustion afterburner. The treated soil would remain at the site, and subsequent treatment/disposal would involve only the ash from the afterburner or the spent carbon. Costs are expected to be in the range of $40 to $90 per ton of contaminated material.

Off-site disposal in a licensed landfill is an easily implemented alternative, but costs are significantly higher than certain of the treatment technologies. DDT is the primary contaminant of concern at the site, and USEPA's RCRA third-third land disposal restriction rule provides a national capacity variance for DDT contaminated soils until May 1993. After May 1993, if an additional national capacity variance is granted, treatment will be necessary prior to land disposal, unless there are further regulatory developments. Assuming available capacity, off-site treatment such as incineration and disposal of ash residues can be accomplished in the current regulatory environment, but it would be very costly.

5.1.5 Selection of Response Alternatives

Selection of Response Alternatives includes exclusion of some alternatives from further consideration and carrying the remaining alternatives forward for further evaluation. The following technologies are considered unattractive for the Pulverizing Services Site:

- In-situ vitrification,
- In-situ biological treatment,
- On-site Incineration, and
- Solvent extraction.

In-situ vitrification would likely be effective in destroying/removing organic pesticide contamination but would leave the site marginal for further use because the subsoil would be fused to a glass-like consistency. In addition, underground utilities such as gas pipelines, water lines, sewage pipes, and storm water pipes may be affected by thermal expansion and vibrations caused by this technology. The process also generates gases which must be treated and is very costly to implement.

In-situ biological treatment holds promise for the future but is not a practical, commercial technology for treatment of pesticide contaminated soils at levels found at the site at the present time.

On-site incineration is similar in cost to off-site incineration. However, additional environmental issues related to emissions in a populated area and disposal of contaminated ash are reasons for excluding this option from further consideration.

Excavation and treatment by solvent extraction is considered unattractive due to its high cost and potential difficulty of selecting and handling the extraction solvent relative to other treatment alternatives.

Based on the review of available response technologies discussed in the preceding sections, several have been selected for a more detailed evaluation as response alternatives. These are:

- Site and drainage controls;
- Encapsulation by means of a slurry wall and cap;
- Disposal in a licensed landfill;
- Soil washing;
- Low temperature thermal desorption; and
- Off-site incineration and disposal.

These potential response actions are evaluated in greater depth in Section 5.2.

5.2 EVALUATION OF RESPONSE ACTIONS

The preliminary engineering evaluations and cost estimates for each response action provided in the following subsections pertain to the construction/remediation costs and do not include items such as access road improvement, laboratory testing, design engineering and field work, preparation of plans and specifications, construction monitoring, and long-term operation and maintenance.

In addition to the engineering evaluations and cost estimates, each alternative is generally evaluated with respect to the following factors or criteria:

- Overall protection of human health and the environment;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility or volume through treatment;
- Short-term effectiveness; and
- Implementability.

5.2.1 Site and Drainage Controls

Installation of site controls for Area B would involve a perimeter fence and warning signs. Based upon Phase I soil sampling results, the fence would be installed one foot inside the property boundary along the eastern, northern, and western sides of Area B. Past analysis for DDT in the southern portion of Area B has yielded concentrations less than 100 mg/kg. Thus the fence would not extend to the southern border. Assuming that 2,000 to 2,500 feet of six-foot high fence is installed at a cost of $8 per foot, the fence would cost $16,000 to $20,000. Signs can be purchased and installed for less than $500.

Drainage controls will minimize the potential for surface erosion. The site topography is relatively flat and well vegetated, so erosion would not be a problem, except during the most severe storms. A berm would be installed along the eastern border of Area A to prevent runoff onto adjacent property. The berm would consist of fine-grained soils with a minimum height of one foot. The height would increase in low lying areas to maintain a constant elevation. Similarly a berm would be placed across the low-lying portion of the western boundary. This is the primary drainage point for Area A, and a sedimentation

pond and discharge point would be installed in this location. One thousand feet of berm, regrading, and excavation of drainage ditches and a shallow, unlined sedimentation basin would cost about $20,000.

Since surface soils contain elevated levels of DDT and similar pesticides, direct contact should be prevented. Signs and fences present institutional and physical barriers to direct contact with these soils. Currently there is a potential surface water runoff migration pathway. This is true despite the fact that DDT has a very low solubility in water. DDT tends to bind to fine soil particles which could be carried with storm water runoff. Drainage controls will reduce mobility, but will not affect toxicity or volume. The value of site and drainage controls are primarily short-term effectiveness and implementability, because they can be implemented in one to three months.

5.2.2 Encapsulation

Encapsulation of the waste would involve installation of a slurry wall around the perimeter of the site and construction of a low-permeability cap over the enclosed area. The slurry wall would consist of a low permeability, soil-bentonite mixture prepared from the excavated soils and added bentonite. The wall would enclose the entire Area A (Figure 1), with a total length of approximately 2,500 feet and average depth of 19 feet. Initially there would be a partial cap, until the buildings were demolished. The thickness of the slurry wall would be approximately two feet. The presence of a continuous clay layer (Marl) at a relatively shallow depth beneath the site make this an attractive response alternative. The area enclosed by the slurry wall would be graded to promote runoff. Building No. 4 would likely have to be demolished to allow slurry wall construction.

Prior to installing the cap, contaminated soil from Area B would be transferred to Area A. The cap would be designed to be consistent with USEPA RCRA regulations and current practice. It would cover approximately 8.5 acres and comprise the following components (from the top surface down):

- Vegetated surface to prevent erosion;
- 24-inch soil cover;
- Filter fabric to prevent clogging of the flow zone;

- Percolated water flow zone - granular or synthetic;
- 40-mil PVC, HDPE or VLDPE barrier layer; and
- Soil fill as needed to protect the liner and bring the site to grade.

The cap would be constructed to extend outside the limits of the slurry wall to prevent any surface runoff from infiltrating and collecting behind the wall.

Encapsulation will interrupt direct contact, surface runoff and windblown dust pathways, and will substantially reduce the source of groundwater contamination. Mobility will be substantially reduced, although toxicity and volume will remain the same. Short-term effectiveness and implementability are excellent, since this alternative can be implemented in six to nine months.

Reduction of toxicity and volume and long term effectiveness would be addressed by reviewing in-situ treatment technologies once every five years. Current excavation and treatment technologies potentially could expose workers and local residents to health risks through wind-blown dust, direct contact, and surface runoff pathways, although engineering controls can reduce such exposure potential. Once a treatment technology is fully developed that does not have this exposure potential, it could be implemented at the site.

A cost estimate for this alternative has been developed based upon discussions with vendors and contractors as well as recent construction management experience Paul C. Rizzo Associates has had with landfill construction projects and synthetic liner installations. The following costs are estimated for this action:

Slurry Wall	$235,600
RCRA Cap	680,000
Total Cost	$915,600

5.2.3 Excavation and Disposal in a Licensed Landfill

Source removal and off-site disposal involves excavating the contaminated soil and transporting it to an off-site disposal facility. The areas to be excavated have been projected, based upon the Phase I geophysical investigation and soil sampling results. It should be noted that the excavation areas and depths are preliminary and may be revised pending the outcome of the Phase II Investigation. Based upon previous analytical results, as well as the results of this study, surface contamination is generally widespread behind the site buildings. Therefore, for the purpose of this cost estimate it is assumed that the top one foot of soil would be removed from the areas which are not paved (Figure 16). Pre- and post-excavation sampling would be performed to determine whether portions of the broad area marked in Figure 16 must be more deeply excavated. Five other areas would be excavated to a greater depth. These areas are shown on Figure 16 and consist of the following:

- A - Area of drums near Boring B-2;
- B - Disposal trenches near Boring B-6;
- C - Magnetometer anomalies near Boring B-9;
- D - Magnetometer anomalies near Boring B-12; and
- E - Contaminated soils near Boring B-20.

Soils near Boring B-20 would be excavated to a depth of four feet. The remaining areas would be excavated to a depth of seven feet below the existing ground surface. If waste materials are found beyond these limits, additional material would be excavated. Post-excavation samples would be analyzed to verify that residual levels of DDT, DDD, and DDE (combined) are below 100 mg/kg.

The contaminated soil would be excavated using ordinary excavation equipment such as hydraulic excavators and front-end loaders. The material would be excavated and loaded directly into over-the-road dump trailers. All equipment operators and workers involved in the excavation of contaminated material would be outfitted in Level C personal protection.

The quantity of soil (in cubic yards) to be excavated is estimated to be as follows:

One-foot layer in Area A	6,760 cy
Area near Boring B-2	1,240 cy
Area near Boring B-6	2,670 cy
Area near Boring B-9	330 cy
Area near Boring B-12	1,470 cy
Area near Boring B-20	740 cy
Total	13,210 cy

Note that this volume assumes that soils with combined pesticide concentrations of greater than 100 mg/kg will be excavated.

Based on an assumed unit weight of 100 pounds per cubic foot and allowing 22 tons per truck, approximately 810 truckloads would be required to dispose of the soil.

In the long term, excavation and off-site disposal will interrupt direct contact, surface runoff and wind blown dust pathways, and will substantially reduce the source of groundwater contamination. Mobility will be substantially reduced, although toxicity and volume of the removed waste will remain the same. In the short term, health risks will be increased due to excavation and transportation of more than 800 truckloads of waste through the streets of Moorestown. Risks due to wind-blown dust, surface runoff and direct contact pathways will increase during the three to six months it would take for excavation and off-site disposal. This is an easily implemented technology.

The soil may be disposed of at a secure, RCRA hazardous waste landfill prior to certain deadlines. The national capacity variance for DDT contaminated soils and debris ends May 1993. However, soils contaminated with greater than 1,000 mg/kg of halogenated organic compounds are prohibited from direct land disposal after

November 8, 1990. Several disposal facilities have been located which are licensed to accept waste of this nature. Landfills which would accept the waste are located in Alabama, New York and South Carolina.

The costs associated with excavation of the contaminated soils have been estimated based upon recent waste removal projects in which Paul C. Rizzo Associates has been involved. Transportation and disposal costs were solicited from licensed hazardous waste haulers and the disposal facilities mentioned above. The costs are as follows:

Excavation - 13,210 cy	$ 92,000
Transportation and Landfilling at $319 to $490 per cy	5,341,000
Backfill Excavation	170,000
Total	$5,600,000

Total costs are based upon the average transportation and disposal cost obtained.

5.2.4 Excavation and Treatment by Soil Washing

Soil washing is reported to be effective for the types of contaminants found at the site. Soil washing is a long-term, permanent-treatment technology which will interrupt direct contact, surface runoff and wind-blown dust pathways, and will substantially reduce the source of groundwater contamination. Toxicity and mobility will be somewhat reduced, although volume of residual material will remain the same. In the short term, health risks will be increased due to excavation and handling of the wastes. Risks due to wind-blown dust, surface runoff and direct contact pathways will increase during the treatment period.

This technology will require one to two years for excavation and treatment of contaminated soils. For the purpose of this study, it is assumed that the treated soil is not affected by the land disposal restrictions and may be replaced on site. It is also assumed that 30 to 50 cubic yards per day can be treated based upon an 8 hour day. Treatability studies are recommended for this alternative which may add up to one year to the schedule.

The cost range is reported to be approximately $150 to $200 per cubic yard. For the quantities discussed in Section 5.2.3, the estimated costs are as follows:

Excavation - 13,210 cy	$92,000
Treatment of Soil by Soil Washing at $200/cy	2,640,000
Backfill Excavation	48,000
Total	$2,800,000

Note that the average cost for treatment was used in this estimate. Actual costs could vary considerably from this estimate, due to the uncertainties discussed above.

5.2.5 Excavation and Treatment by Low Temperature Thermal Desorption

Low temperature thermal desorption is reported to be an effective means of treatment for the types of contaminants found at the site. This process is a long-term, permanent-treatment technology which will interrupt direct contact, surface runoff, and wind-blown dust pathways, and will substantially reduce any groundwater contamination. Toxicity and mobility will be somewhat reduced, although the volume of residual material will remain the same. In the short-term, health risks will be increased due to the excavation and handling of the wastes. Risks due to wind-blow dust, surface runoff, and direct contact pathways will increase during the excavation and treatment period.

This technology will require one to two years for excavation and treatment of contaminated soils. For the purpose of this study, it is assumed that the treated soil is not affected by the land disposal restrictions and may be replaced on site. It is also assumed that 500 to 700 cubic yards per day can be treated based on 24 hours operation. Treatability studies are recommended for this alternative, which may add up to one year to the schedule.

One vendor of this technology has a mobile unit based in Philadelphia, and quotes costs of $15,000 to $20,000 for mobilization and $40 to $90 per ton of contaminated material. These costs are dependent on soil characteristics and the required cleanup levels. Based on the quantities discussed in Section 5.2.3, the estimated costs are as follows:

Excavation - 13,210 cy	$ 92,000
Mobilization of Treatment System	200,000
Treatment of Soil by Low Temperature Thermal Desorption at $90/ton	1,600,000
Backfill Excavation	48,000
Total	$1,940,000

5.2.6 Excavation and Treatment by Off-Site Incineration

This action involves transportation of contaminated site soils to a licensed off-site incinerator facility. In the long term, excavation and off-site incineration will interrupt direct contact, surface runoff and wind-blown dust pathways, and substantially reduce the source of groundwater contaminants. Mobility, toxicity and volume will be substantially reduced. In the short term, health risks will be increased due to excavation and transportation of more than 800 truckloads of waste through the streets of Moorestown. Risks due to wind-blown dust, surface runoff and direct contact pathways will increase during the three to six months it would take for excavation and off-site treatment. This is an easily implemented technology; however the EPA has specifically found that there is insufficient incineration capacity for DDT-contaminated soil and debris.

Excavation, transportation and backfill costs are similar to those for the landfill disposal option. However, incineration fees are substantially higher than landfill disposal fees. Two facilities (one in Illinois and one in Texas) have been identified which will accept the site wastes for incineration. The cost breakdown is as follows:

Excavation - 13,210 cy	$ 92,000
Transportation and Incineration at $1,438 to $2,030 per cy	22,907,000
Backfill Excavation	170,000
Total	$23,200,000

Total costs are based on the average transportation and incineration costs obtained.

5.3 RECOMMENDED RESPONSE ACTION

The response actions considered and their estimated associated costs (rounded to two significant figures) are as follows:

Site and Drainage Controls	$ 41,000
Encapsulation	$ 920,000
Excavation and Disposal in a Licensed Landfill	$ 5,900,000
Excavation and Treatment by Soil Washing	$2,800,000
Excavation and Treatment by Low Temperature Thermal Desorption	$2,000,000
Excavation and Treatment by Off- Site Incineration	$23,000,000

Site and drainage controls are recommended as an interim measure only. In the longer term, additional measures will be required to minimize environmental hazards associated with the site.

Treatment at the site by soil washing or low temperature thermal desorption should provide acceptable cleanup levels and are substantially less costly than off-site incineration. Thus, off-site incineration is not a recommended response action. However, treatability studies are recommended for the soil washing and low temperature thermal desorption alternatives.

Encapsulation combined with site and drainage controls will effectively isolate site contaminants from the public. Short-term effectiveness and implementability are excellent. Long-term effectiveness and reduction of toxicity and volume may be achieved by review of in-situ treatment technologies every five years and implementation of one of these technologies if an attractive response action is identified in terms of reducing toxicity and volume. If an attractive in-situ response is not identified, this is not considered to be a permanent remedy, since future site use will be somewhat limited. Due to the time it

would take to develop an in-situ treatment technology, this alternative is less attractive than excavation and on-site treatment or off-site disposal.

Excavation and disposal in a licensed landfill is protective of human health and the environment since all major exposure pathways will be incomplete. This alternative will effect a permanent reduction in mobility, although the toxicity and volume of the removed waste will remain the same. Increased short-term risks are limited to three-to-six months of excavation and transportation. This alternative does not meet the treatment goal or SARA and the cost is higher than treatment alternatives. Based upon the factors considered above, excavation and disposal in an off-site landfill is not the recommended response action.

Assuming effective treatment, excavation, and treatment by soil washing or low temperature thermal desorption is protective of human health and the environment since all major exposure pathways will be incomplete. Either technology will effect a permanent reduction in mobility and toxicity of the treated wastes. Short-term risks are increased during the period of excavation and treatment. Both treatment technologies are expected to effectively remove contaminants from the wastes, however, treatability studies are recommended to confirm the effectiveness of the technologies. Low temperature thermal desorption is expected to cost less than soil washing. Based upon these factors, excavation and treatment by low temperature thermal desorption is the recommended response action.

6.0 PROPOSED PHASE II SITE OPERATIONS PLAN

Based on the requirements of the Order and the results of the Phase I Investigation presented herein and site knowledge gained since the Phase I Investigation, a proposed Phase II Site Operations Plan has been developed. The proposed program, as presented in the following subsections, specifically addresses the stipulations of the Order as well as further characterization of the Phase I study area.

From the results of previous investigations and the Phase I sampling, soil northwest of the buildings in Area A and surface soil near Borings B-20 in Area B behind the garage contains DDT at levels exceeding 100 mg/kg and groundwater in Area A has been impacted by site operations.

Phase II will consist of the following tasks:

- Further defining the limits of soil contamination in Area A;
- Assessing the location and extent of a reported trench disposal area behind Building 5;
- Trenching to assess the location of past disposal trenches;
- Assessing Areas B and C for soil contamination;
- Assessing surface water and sediment contamination in site drainage ditches;
- Implementing a groundwater monitoring program to:
  - Further assess on-site groundwater contamination;
  - Assess Area B and C groundwater contamination, if any;
  - Locate public wells within 1 mile of the site and private wells within ¼ mile of the site;

- Assess available groundwater data on nearby public and private wells;
- Sample nearby public and private wells, if necessary; and
- Research the local hydrogeologic framework.

- Sampling of underground storage tanks;

- Excavating test pits to assess the integrity of buried drums; and

- Evaluating potential contamination migration pathways.

6.1 SOIL SAMPLING

Additional soil sampling will be performed as part of the Phase II Investigation to define more accurately the extent of contamination found during Phase I and prior investigations. The surface soil samples will be obtained from a depth range of six inches to one foot. A shovel will be used to remove the surface material. The sample will then be obtained with a stainless-steel trowel. Deeper samples will be obtained using a hydraulically powered sampler, if the location can be accessed with the equipment. Information on this sampler is included in Appendix G. The samples will be placed in a stainless-steel pan, quartered, and each quarter thoroughly mixed. The quarter portions will then be thoroughly blended and the resultant sample will be placed in the appropriate sample containers. Soil sampling procedures will follow those used in Phase I.

Any material excavated from the sampling point will be replaced in the hole and firmly tamped. The sampling equipment and mixing pan will be decontaminated as described in Section 5.4.2 of the QA/QC Plan.

Field screening for soil contamination will be used to rapidly assess the concentration of pesticides in site soils and to direct additional sampling efforts, if required. Screening will be conducted using a field chemical extraction method with final chloride measurement. This procedure utilizes sodium metal to remove chloride from a soil sample. The concentration of chloride in the final extract is then measured using a chloride-specific electrode (Finch, *et. al.*,1990). By measuring the chloride concentration the pesticide

concentration can be estimated. The correlation between field screening and actual pesticide concentration will be evaluated initially by analyzing 15, samples both in the laboratory following CLP protocols and with the field screening protocols. These results will be used to correlate the field results to laboratory values. Data from another USEPA Region II site (Walton Farm) will also be used to assess the correlation. Walton Farm wastes are very similar to the Pulvering Services waste. The field method assumes all chloride detected is from a pesticide compound. If the field screening results do not correlate well with the laboratory analytical results, TOX analysis in the laboratory will be performed.

This screening method is expected to perform well at this site. Preliminary tests at another site in Region II with pesticide contamination gave encouraging results. The screening method was originally developed for PCB screening by Dexsil Corporation of Hamden Connecticut. Our discussions with Dexsil and others that have used the test kits indicate that the same theory applies to pesticides containing chloride such as DDT, DDE, DDD which are the main contaminants of interest at the Pulverizing Services Site. Product information is included in Appendix G. Other screening methods which were currently under development may be considered following discussion with the USEPA prior to field activities.

Soil samples will be collected as described above and taken to the field trailer for preparation. Samples will then be prepped/extracted according to Dexsil's procedures and analyzed for chloride using the L2000 analyzer (sample analysis protocols are included in Appendix G). The L2000 has a testing range of 5 ppm to 2000 ppm. The chloride concentration of the sample will be compared to the calibration curves to estimate the pesticide concentration. Sample testing time is reported to be about 15 minutes. Since the sample analysis time is very rapid, many samples can be analyzed in a short period of time. This will allow a much greater number of samples to be collected to define site contamination rather than waiting several weeks for sample results.

For verification of the sample results approximately 20 percent or a maximum of 25 of the field screened soil samples will also be analyzed for TCL Pesticides, TOX, sevin, and malathion. Table 12 presents a summary of Phase II samples and analytical parameters.

The Phase II soil sampling will be guided by several factors:

- The most recent proposed cleanup standards for New Jersey had two cleanup standards; one for zero to two feet and one for two feet deep or greater.
- The site has a relatively high groundwater table beneath it.
- DDT, DDD and DDE were found in greatest concentrations.
- Except in the disposal areas themselves, significant contamination was limited to the upper few feet of soil.

Based on these factors, soil sampling outside of disposal areas will generally be conducted in the first four feet of soil and above the site water table. The field team leader may adjust sample locations based upon field conditions encountered. If analytical results indicate significant contamination at these depths, the flexibility of field analysis allows for additional samples to be collected for analysis, if needed, based upon real-time data generated by the field screening approach.

6.1.1 Area A

Surface soil samples will be obtained offsite along each side of Area A outside the fence along the east (four samples) and west (three samples) sides of the property (Figure 17) to assess contaminant migration. Also two subsurface samples will be obtained along the front of the property along New Albany Road (Figure 17) in the former sulfur storage area. Additional samples will be obtained throughout Area A and at various depths. These sample locations are also shown in plan on Figure 17. Initial Area A soil samples will be collected from 0-1 feet, 1-2 feet and 3-4 feet below ground surface. The 0-1 feet and 1-2 feet samples will be analyzed at all locations. The samples from 3-4 feet will be analyzed if the 1-2 feet results exceed 100 mg/kg chlorinated compounds.

Twelve soil sample locations have been selected to better define the horizontal and vertical extent of areas of known pesticide contaimination and five sample locations are from paved areas of Area A. The total number of soil sample locations is 28.

6.1.2 Area B

Soil samples are proposed in the area behind the building in Area B. The samples will be in the approximate locations shown on Figure 17. The results from analysis of these samples should allow evaluation of the extent of surface and subsurface contamination in this area. The same sample depths, protocols, and screening procedure used on Area A soil samples will be used for Area B soil samples.

These sample locations have been selected to target known and potential areas of contamination, and provide a broad coverage of the area. Soil sample locations are in potential drainage swales and potentially impacted areas as indicated by aerial photographs. There are a total of 20 sample locations.

6.1.3 Area C

Soil samples are proposed in the area behind the site in Area C. The samples will be in the approximate locations shown on Figure 17. The results from analysis of these samples should allow evaluation of the extent of surface and subsurface contamination in this area. The same sample depths, protocols, andscreening procedure used in Area A will be used for Area C samples.

As can be seen in Figure 17 sample locations will provide a broad coverage of the area, including the former drainage ditch. A total of 14 soil sample locations have been selected.

6.1.4 Geotechnical Samples

In order to evaluate potential soil treatment technologies additional information is required regarding the soil physical characteristics. A total of six soil samples will be selected from

the current sample locations in Area A and B for analysis. Laboratory analysis of these samples will be performed for the following parameters:

- Grain size distribution
- Atterberg limits
- Moisture Content
- pH

In-situ soil moisture content and density testing will also be performed at several locations across the site. This testing will be performed using nuclear measurements per ASTM 2922 and 3017.

6.2 SURFACE WATER AND SEDIMENT SAMPLING

Three surface water and sediment samples will be obtained from the current drainage ditch which flows from Area A to Area C (Figure 17). These samples will be collected near the point at which the sediment sample was taken during the Phase I Investigation as well as upstream near the start of the ditch and downstream where the ditch enters the stormwater system. Two surface water and sediment samples will be obtained from the drainage ditch along the railroad track in Area B. The approximate locations of these samples are shown on Figure 17. Sediment samples will first be screened using the methods described for pesticides in Section 6.1. Surface water sediment samples will be analyzed by CLP methods for TCL volatiles, semivolatiles and pesticides (excluding dioxin), arsenic, cadmium, chromium, lead, malathion, and sevin.

In addition, general water chemistry parameters will include hardness, dissolved organic carbon, pH, temperature and specific conductance for surface water and TOC and pH for sediment.

6.3 LITERATURE SEARCH

Preceding or concurrent with the field activities, a literature search will be conducted into the local and regional geology and hydrogeology, local public and private wells, and the potential for migration of contaminants from the site via the groundwater pathway. This information will be used to help guide the deep well placement. (See Section 6.4.1.2). The literature search will also target information on the following:

- Public wells within one mile of the site.
- Private wells within ¼ mile of the site.
- Groundwater data for the above wells from the last 10 years.

This literature search will include but not be limited to USGS reports, NJ Division of Water Policy and Supply reports, and the State of New Jersey well inventory. Any wells identified will be indicated on a map which also shows the site.

If off-site wells are identified that could be affected by site contaminants, these wells will be sampled as described below.

6.4 GROUNDWATER MONITORING PROGRAM

In accordance with the Consent Order, groundwater monitoring will take place to assess the scope and nature of groundwater contamination.

6.4.1 Groundwater Monitoring Wells

Based on the results of analysis of groundwater samples from the six monitoring wells installed as part of the Phase I Investigation, some additional wells in the shallow aquifer are proposed. Also, a deep monitoring well will be installed. For all monitoring wells, a geologic boring log of samples obtained will be prepared, as well as a schematic drawing showing the details of monitoring well installation. Drilling, sampling, and monitoring well installation procedures will be as indicated in the QA/QC Plan.

6.4.1.1 Shallow Monitoring Wells

Piezometers will be used to refine the groundwater flow direction. Based on this information, monitoring wells will be installed.

Small diameter piezometers will be installed in numerous areas of the site. Since the water level data from Phase I indicates a very flat water table over much of Area A these

piezometers will help define the shallow groundwater flow direction. Based on the water levels defined by the existing monitoring wells and the new piezometers and the groundwater analytical data obtained in Phase I, it is currently anticipated that new monitoring wells will be installed during Phase II. This approach will optimize the placement of monitoring wells.

The piezometers will be installed to below the water table using the Geoprobe system. This system uses a hydraulically powered probe to make a hole to the required depth. Upon reaching this depth, the probe is extracted and a one-inch diameter PVC piezometer is inserted in the hole. The probe rod and the piezometer are approximately the same diameter so there is no annulus to backfill. Given the shallow water table in the site area, several of these piezometers can be installed in a work day.

A total of 20 piezometers will be installed to supplement existing water level data (Figure 18). They will be installed in the following areas:

- Area A - 7 piezometers will be installed to further refine the shallow groundwater table and to define the groundwater flow direction.

- Area B - 6 piezometers will be installed to define the groundwater flow direction in this portion of the site. No piezometers are necessary at the swampy southern end of Area B since a surface water staff gage is already installed in this area. The data from these piezometers will be combined with Area A data to assess the potential for contaminant migration.

- Area C - 7 piezometers will be installed to define the groundwater flow direction in this portion of the site. The data from these piezometers will be combined with Area A data to assess the potential for contaminant migration.

Each well and piezometer will be surveyed for horizontal and vertical coordinates.

Available drilling and installation data for public wells within one mile of the site and private wells within one quarter mile of the site will be obtained. Analytical data covering the last ten years from the wells identified will be obtained, if available, as part of this effort. Any wells identified will be indicated on a map which also shows the site.

6.4.1.2 Deep Monitoring Well

The location of this well will be based on the direction of groundwater flow in the site area of the aquifer below the clay unit. This information will be obtained from groundwater publications. (See Section 6.3).

The deep well (MW-7) will be screened below the clay layer observed at the site. It is anticipated that the well will be about 50 feet deep.

6.4.2 Groundwater Sampling and Analysis

After the new monitoring wells are installed, they will be purged and sampled in accordance with the Phase I QAPP. If the existing Plant Production well is accessible, it to will be sampled. Based on the Phase I data, these wells will be analyzed for the following parameters:

- TCL volatiles, semivolatiles, and pesticides (excluding dioxin).
- Arsenic, cadmium, chromium, and lead (total and dissolved); and
- Sevin and malathion.

6.4.3 Groundwater Levels

Water surface elevations in piezometers and new and existing monitoring wells will be periodically measured (a minimum of once a month for 3 months) to confirm the information gathered from the first round of water elevations collected after installation of the Phase II monitoring wells.

6.5 OFF-SITE WELLS

If off-site wells are identified (Section 6.3) which could potentially be affected by the site, a program will be implemented to sample these wells. Sampling procedures will be in accordance with the Phase I QAPP. Analysis parameters will be determined based on the location of the well and the migration potential of site contaminants.

6.6 TEST PIT EXCAVATIONS

6.6.1 Area A

To better define the extent of subsurface contamination behind Building 29, several trenches are proposed, as shown on Figure 19. Trenches are more cost effective than exploratory borings because the sampling points can be selected on the basis of visual observation across a large area. A substantial number of borings would be required to provide the same amount of information that can be obtained in a few days using trenches.

Two or possibly three exploratory trenches will be excavated perpendicular to the assumed direction of the disposal trenches. The exploratory trenches will be excavated to an approximate depth of eight to ten feet. The depth to groundwater in this area is estimated to be between two and six feet, it is unlikely that units will be disposed below the ground water table. The initial trench will start near Boring B-6 and progress toward Building 29. When 10 to 20 feet of exploratory trench does not intersect a disposal trench, the trenching equipment will return to the starting point and work in the opposite direction until disposal trenches are no longer found. This would constitute one exploratory trench. A second exploratory trench would be excavated in an identical manner near Boring B-8.

The trenches will be excavated with a backhoe and will be approximately two feet wide. Any material removed from the trench will be placed on polyethylene sheeting, and the material will be returned to the trench when sampling is complete. No work will be performed during heavy rainfall when surface transport of any excavated contaminants

could occur or when the wind exceeds 20 miles per hour. Any drums encountered during trenching will be left in place. A soil sample will be collected from adjacent to the drum.

Depending on the visual results of the first two exploratory trenches, a third trench location may be selected.

Soil samples will be taken below the limits of waste disposal and at about five feet below the surface between disposal trenches and near the outside ends of the exploratory trenches. A total of ten to 20 soil samples will be taken depending on the number of disposal trenches encountered. The soil samples will be analyzed in the field for pesticides using methods described in Section 6.1. A minimum of two samples will be sent to the laboratory to be analyzed for the TCL volatiles, semivolatiles and pesticides (excluding dioxin), arsenic, cadmium, chromium, lead and sevin, and malathion.

In addition to the visual inspection, the trenches will also be photographically documented. Once the documentation is complete and the samples have been obtained, the trench will be lined with plastic sheeting and the excavated material will be returned to the trench. The trench location will then be covered with plastic.

An additional test pit will be excavated at the edge of the buried drum location to assess the integrity of buried drums (Figure 17). The test pit will be carefully excavated working towards the drum location. Material around the first drum encountered will be temporarily removed to allow visual assessment of the drum. If the drum is open or rusted through, a sample of the drum contents will be collected. A second sample will be collected from below the drum location. If the drum appears to be intact, only a sample from below the drum will be collected. A second test pit will be excavated between B-11 and B-12 to assess the EM conductivity anomaly (Figure 17).

During the trenching and sampling in Area A, air monitoring will be performed at the site perimeter in a downwind direction. Sample collection and preparation will follow USEPA Method T04. Method T04 uses a high-volume sampler consisting of a glass fiber filter with a polyurethane foam (PUF) backup absorbent cartridge. After preparation, analysis will be for TCL pesticides following the methodology identified in the QA/QC Plan. The

detection limit using the above procedures is approximately 1.0 nanogram per cubic meter (ng/m^3).

6.6.2 Areas B and C

Waste disposal at depth in Areas B and C is not suspected. Although, the property owner has stated that debris from a plant fire in 1964 may have been buried behind the office in Area B. In order to assess this possibility, four test pits will be excavated in each of the Areas B and C (Figure 17). If no waste is encountered, excavation will stop at five to six feet below the ground surface. If waste is encountered excavations will proceed to the bottom of waste or the limit of the backhoe whichever is encountered first.

If waste is encountered, two samples will be collected; one from the waste material and one from below the limits of waste disposal. These samples will be analyzed for TCL pesticides (excluding dioxin), arsenic, cadmium, chromium, lead, sevin and malathion. Additional test pits will be excavated to define the disposal limits.

6.7 BUILDING 5 TRENCH

The location of the reported trench behind former Building 5 will be assessed by visual inspection of the area for cleanouts, manholes, etc. If material is found in the trench, it will be first screened for pesticides using methods described in Section 6.1 and then sampled and analyzed for TCL volatiles, semivolatiles, pesticides (excluding dioxin), arsenic, cadmium, chromium, lead, sevin and malathion.

6.8 UNDERGROUND TANK SAMPLING

The location of the three underground storage tanks (USTs) will be assessed visually (approximate locations shown on Figure 18). Once located, these USTs will be accessed by opening the fill port or manway. These tanks are reported to have contained fuel oil for use at the site. Tank contents will be sampled and analyzed for TPH using gas chromatography to identify the product. If visible soil contamination is present soil samples may be field screened for TPH.

6.9 POTENTIAL MIGRATION

Contaminant sources and concentrations in each medium will be analyzed to characterize contaminant migration pathways associated with the Site. Potential exposures to surrounding ecological and huma receptors will be identified. The results of the pathway analysis will be presented in the Phase II report and will be used to develop preliminary response action objectives and goals.

As part of the pathways analysis, data on potential receptors will be collected. Data collected will describe the human populations that are potentially susceptible to releases from the site. The following will be identified:

- Local uses and possible future uses of groundwater, including type of use;
- Local uses and possible future uses of surface waters drainage the facility;
- Human use or access to the facility and adjacent lands;
- A demographic profile of the people who use or have access the facility and adjacent land; and
- A description of plant and animal species observed near the site.

The data collected will be evaluated to assess the following:

- Exposure pathways and potential human receptors; and
- Exposure pathways and potenital environmental receptors.

The intent of the evaluation will be to obtain sufficient data to develop site specific health-based cleanup levels.

7.0 SCHEDULE

The schedule provided in the following is in accordance with the Consent Order for the proposed Phase II Investigation:

TASK	START	FINISH
Field Investigation	2 weeks	13 weeks
Laboratory Analysis	4 weeks	14 weeks
Data Analysis/Preparation of Draft Phase II Site Investigation Report	10 weeks	21 weeks

Note that zero weeks is the date of approval of the Phase II Site Operations Plan by USEPA.

Since the original intent of the Phast I and Phase II schedules has changed somewhat as discussed in Section 1.1, it is anticipated that a revised schedule will be proposed under separate cover.

8.0 SUMMARY

In response to the Order issued by USEPA to PPG, an investigation of the Phase I Study Area was performed from June 1989 to May 1990. The initial field investigation commenced during June 1989 with EM and magnetic geophysical surveys. The results of these surveys and a previous GPR survey were used to define the drilling and sampling program for the Phase I Investigation.

Twenty borings were drilled for soil sampling and six monitoring wells were installed in the second portion of the field investigation which initiated in December 1989 and was completed in January 1990. Surface soil sampling and sediment sampling were also a part of the field investigation.

The surface aquifer at the site was found to overlay an extensive layer of clay (Marl) at a depth averaging about 20 feet. Gradients are low with the most pronounced flow toward the northwest in the direction of Well MW-6. This flow direction correlates with surface drainage at the site.

Surface contamination was found to be generally greater than 100 mg/kg in Area A and behind the garage in Area B. Subsurface contamination was found to be high in areas where trench disposal occurred in the past. Volatile and semivolatile compounds were detected in several monitoring wells. Sevin was the primary pesticide detected in the wells, apparently because of its relatively high solubility (Vershueren, 1983).

Based on the findings of the Phase I Investigation, a Phase II Investigation will be initiated to assess potential contamination in Area C, better define the extent of contamination in Area B and around the perimeter of Area A, to define the extent of the disposal trenches, and to determine the extent of contaminants detected in Wells MW-2, MW-5, and MW-6.

Potentially applicable response technologies have been reviewed and several were selected for a more detailed examination and cost estimate. On the basis of this comparison, excavation and treatment by low temperature thermal desorption is the recommended response action.

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TABLES

TABLE 1
SOIL SAMPLES FOR ANALYSIS
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	SAMPLE DEPTH		
BORING	**SHALLOW**	**INTERMEDIATE**	**DEEP**
B-1		*(a)	X(b)
B-2	X	*	X
B-3	X	X	X
B-4	X	X	X
B-5		X	X
B-6		*	X
B-7		*	X
B-8		*	X
B-9		X	X
B-10		X	X
B-11		*	X
B-12		X	X
B-13		X	X
B-14		X	X
B-15		X	X
B-16	X	X	X
B-17	X	X	X
B-18	X	X	X
B-19		*	X
B-20	+(c)	*	X

a. Analysis for complete TCL plus Sevin, malathion, PCNB, and dioxin.
b. Analysis for TCL pesticides plus Sevin, malathion, and PCNB.
c. Four shallow soil samples were obtained in the vicinity of Boring B-20 and these were analyzed for TCL pesticides plus Sevin, malathion, and PCNB.

TABLE 2
TOTAL DDD, DDE, AND DDT IN SOIL SAMPLES
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	CONCENTRATION[a]		
BORING	**SHALLOW**	**INTERMEDIATE**	**DEEP**
B-1	--[b]	9.75	0.166
B-2	194	0.038	0.056
B-3	270	0.031	0.157
B-4	12.3	0.031	ND(0.019)[c]
B-5	--	0.336	0.030
B-6	--	470/304[d]	1.88
B-7	--	0.158	ND(0.018)
B-8	--	13.2	0.959
B-9	--	0.087	0.052
B-10	--	ND(0.019)	0.038
B-11	--	0.066/0.056	0.052
B-12	--	215	13.3/5.4
B-13	--	0.166	0.034
B-14	--	0.034	0.049
B-15	--	0.984	ND(0.020)
B-16	0.252	0.175/0.062	ND(0.020)
B-17	1.63	ND(0.020) /ND (0.021)	ND(0.022)
B-18	0.704	ND(0.020)	ND(0.022)
B-19	--	ND(0.019)	ND(0.022)
B-20	--	0.227	2.92

a. All concentrations in mg/kg.
b. No sample analyzed.
c. Not detected (detection limit).
d. Duplicate analysis.

TABLE 3
TOTAL ALPHA, BETA, DELTA, AND GAMMA BHC
IN SOIL SAMPLES
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	CONCENTRATION[a]		
BORING	**SHALLOW**	**INTERMEDIATE**	**DEEP**
B-1	--[b]	ND(0.090)[c]	ND(0.009)
B-2	ND(0.900)	0.012	0.060
B-3	ND(0.900)	ND(0.009)	0.025
B-4	ND(0.090)	ND(0.010)	ND(0.009)
B-5	--	0.030	ND(0.009)
B-6	--	23/5.6[d]	ND(0.900)
B-7	--	0.103	0.025
B-8	--	0.100	0.54
B-9	--	0.062	ND(0.010)
B-10	--	ND(0.009)	ND(0.010)
B-11	--	0.020/0.060	ND(0.010)
B-12	--	ND(5)	ND(1)/ND(1)
B-13	--	0.015	0.22
B-14	--	0.054	ND(0.010)
B-15	--	0.097	ND(0.010)
B-16	0.011	ND(0.009) /ND(0.009)	0.106
B-17	0.018	0.26/0.24	ND(0.010)
B-18	ND(0.090)	0.040	ND(0.010)
B-19	--	ND(0.090)	ND(0.010)
B-20	--	0.036	ND(0.100)

a. All concentrations in mg/kg.
b. No sample analyzed.
c. Not detected (detection limit).
d. Duplicate analysis.

TABLE 4
N-METHYL CARBAMATES (SEVIN) IN SOIL SAMPLES
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	CONCENTRATION[a]		
BORING	**SHALLOW**	**INTERMEDIATE**	**DEEP**
B-1	--[b]	ND(0.100)[c]	ND(0.100)
B-2	ND(0.100)	ND(0.100)	ND(0.100)
B-3	0.20	ND(0.100)	ND(0.100)
B-4	ND(0.100)	ND(0.100)	ND(0.100)
B-5	--	ND(0.100)	ND(0.100)
B-6	--	19/0.60[d]	0.60
B-7	--	0.90	0.20
B-8	--	ND(0.100)	5.9
B-9	--	2.20	ND(0.100)
B-10	--	0.10	ND(0.100)
B-11	--	0.30/0.30	ND(0.100)
B-12	--	3.0	4.5/4.5
B-13	--	0.20	6.0
B-14	--	0.50	ND(0.100)
B-15	--	1.1	ND(0.100)
B-16	ND(0.100)	ND(0.100) /ND(0.100)	6.7
B-17	ND(0.100)	0.30/0.30	ND(0.100)
B-18	ND(0.100)	ND(0.100)	ND(0.100)
B-19	--	ND(0.100)	ND(0.100)
B-20	--	ND(0.100)	ND(0.100)

a. All concentrations in mg/kg.
b. No sample analyzed.
c. Not detected (detection limit).
d. Duplicate analysis.

TABLE 5
ALDRIN IN SOIL SAMPLES
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	CONCENTRATION[a]		
BORING	**SHALLOW**	**INTERMEDIATE**	**DEEP**
B-1	--[b]	ND(0.090)[c]	ND(0.009)
B-2	ND(0.900)	ND(0.009)	ND(0.010)
B-3	ND(0.900)	ND(0.009)	ND(0.010)
B-4	ND(0.090)	ND(0.010)	ND(0.009)
B-5	--	0.022	ND(0.009)
B-6	--	6.9/3.2[d]	ND(0.90)
B-7	--	ND(0.100)	ND(0.009)
B-8	--	ND(0.090)	ND(0.010)
B-9	--	ND(0.010)	ND(0.010)
B-10	--	ND(0.009)	ND(0.010)
B-11	--	ND(0.010) /ND (0./010)	ND(0.010)
B-12	--	ND(5.0)	ND(1.0) /ND(1.0)
B-13	--	ND(1.0)	ND(0.010)
B-14	--	ND(0.010)	ND(0.010)
B-15	--	ND(0.010)	ND(0.010)
B-16	ND(0.009)	ND(0.009) /ND(0.009)	ND(0.010)
B-17	ND(0.009)	ND(0.010) /ND(0.010)	ND(0.010)
B-18	ND(0.009)	ND(0.010)	ND(0.010)
B-19	--	ND(0.009)	ND(0.010)
B-20	--	ND(0.009)	ND(0.100)

a. All concentrations in mg/kg.
b. No sample analyzed.
c. Not detected (detection limit).
d. Duplicate analysis.

TABLE 6
DIELDRIN IN SOIL SAMPLES
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	CONCENTRATION[a]		
BORING	**SHALLOW**	**INTERMEDIATE**	**DEEP**
B-1	--[b]	ND(0180)[c]	ND(0.018)
B-2	3.1	0.022	0.021
B-3	4.1	ND(0.018)	ND(0.020)
B-4	ND(0.180)	ND(0.019)	ND(0.019)
B-5	--	0.019	ND(0.019)
B-6	--	63.9/42.6[d]	0.74
B-7	--	0.095	ND(0.018)
B-8	--	0.39	0.041
B-9	--	ND(0.020)	ND(0.021)
B-10	--	ND(0.019)	ND(0.021)
B-11	--	0.046/0.042	0.028
B-12	--	0.84	ND(0.210) /ND(0.210)
B-13	--	ND(0.210)	ND(0.022)
B-14	--	ND(0.020)	ND(0.020)
B-15	--	ND(0.010)	ND(0.020)
B-16	0.040	ND(0.019) /ND(0.019)	ND(0.020)
B-17	0.051	ND(0.020) /ND(0.021)	ND(0.022)
B-18	ND(0.019)	ND(0.020)	ND(0.022)
B-19	--	ND(0.019)	ND(0.022)
B-20	--	ND(0.017)	ND(0.190)

a. All concentrations in mg/kg.
b. No sample analyzed.
c. Not detected (detection limit).
d. Duplicate analysis.

TABLE 7
OTHER ANALYTES DETECTED IN SOIL SAMPLES
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

BORING	ANALYTE	CONCENTRATIONS [a]	DEPTH
B-6	Toluene	0.007/0.068[b]	Intermediate
	Xylenes	0.025/0.030	Intermediate
	Methylene Chloride	0.110/0.73	Intermediate
	1,1-Dichloroethene	ND(0.006)/0.064	
	Tricholoethene	ND(0.006)/0.055	
	Benzene	ND(0.006)/0.054	
	Chlorobenzene	ND(0.006)/0.058	
	Ethylbenzene	ND(0.006)/0.005	
B-7	Endosulfan I	0.21	Intermediate
	Endrin Ketone	0.046	Intermediate
	Endosulfan I	0.016	Deep
B-11	Methylene Chloride	0.027/0.020	Intermediate
	Phenol	0.81/0.50	Intermediate
B-14	Endosulfan I	0.032	Intermediate

a. All concentrations in mg/kg.
b. Duplicate analysis.

TABLE 8
SURFACE SOIL SAMPLES NEAR BORING B-20
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	CONCENTRATION[a]			
ANALYTE	**SS-1**	**SS-2**	**SS-3**	**SS-4**
Alpha BHC	0.17	ND(1.4)[b]	ND(150)	ND(18) /ND(18)[c]
Beta BHC	0.18	ND(1.4)	ND(150)	ND(18) /ND(18)
DDE	0.72	ND(2.8)	ND(300) /ND(310)	ND(36)[c]
DDD	ND(0.19)	ND (2.8)	1,940 /ND(300)	ND(36) /ND(36)
DDT	2.71	23.4	14,000 /27,200	1,240 /1,300

a. All concentrations in mg/kg.
b. Not Detected (detection limit).
c. Duplicate Analysis.

TABLE 9
RESULTS OF SEDIMENT SAMPLE ANALYSIS
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

ANALYTE	CONCENTRATION[a]
Malathion	0.15
DDD	21.1
Acetone	0.093
Benzene	0.010
Tetrachloroethene	0.010
Chlorobenzene	0.032
Ethylbenzene	0.010
Xylenes (total)	0.098
Phenol	1.17

a. All concentrations in mg/kg.

TABLE 10
SUMMARY OF COMPOUNDS MEASURED IN GROUNDWATER SAMPLES[a]
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

ANALYTE	MW-1	MW-1 Duplicate	MW-2	MW-2 Duplicate	MW-3	MW-4	MW-5	MW-6
Acetone	30	ND(10)	-[b]	17	32	120	32	63
Carbon Disulfide	-	-	-	-	-	-	91	-
Diethyl phthalate	-	-	-	-	-	-	90	-
Benzene	-	-	-	-	-	-	10	-
4-Methyl 2-Pentanone	-	-	-	-	-	25	-	38
Ethylbenzene	-	-	-	-	-	-	34	-
Xylenes(total)	-	-	25	23	-	-	320	-
Chlorobenzene	-	-	-	-	-	-	16	-
1,1,1-TCA	-	-	-	-	-	-	6	-
1,1,2-TCA	-	-	-	-	-	-	30	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	35	-
Tetrachloroethene	-	-	-	-	-	-	7	13
Naphthalene	-	-	122	154	-	-	-	-
2-methylnaphthalene	-	-	290	ND(20)	-	-	-	-
Nitrobenzene	-	-	-	-	-	-	207	-
Alpha BHC	-	-	4	4	-	0.33	84	5
Beta BHC	-	-	-	-	1.2	-	9	-
Delta BHC	-	-	-	-	0.2	-	16	0.57
Gamma BHC (Lindane)	-	-	3	4	1.4	0.11	-	3
DDT	-	-	0.1	ND(0.2)	1.0	-	-	-
Dieldrin	-	-	-	-	0.5	0.1	-	-
Endrin Ketone	-	-	-	-	0.2	-	-	-
Malathion	-	-	22	23	-	-	-	0.2
Sevin[c]	-/-	-/-	152/253	174/263	-/-	-/-	14500/2795	182/221

a. All concentrations in µg/l.
b. Not detected. Detection limits provided in Appendix E.
c. Analysis for Sevin by Method 531.1/CA SOP 734.

TABLE 11
GROUNDWATER ELEVATIONS
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

WELL	DEPTH TO GROUNDWATER[a]	ELEVATION[b]
MW-1	4.2	62.2
MW-2	7.87	61.2
MW-3	6.08	61.9
MW-4	1.78	61.9
MW-5	3.29	61.9
MW-6	1.24	56.9

a. Feet below ground surface.
b. Groundwater surface elevations in feet relative to mean sea level (MSL).

TABLE 12
SUMMARY OF PHASE II SAMPLING AND ANALYSIS
PHASE II SITE OPERATIONS PLAN
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

Environmental Medium/Activity	No. of Samples	Analytical Parameters
Soil	25	Total organic halides. TCL pesticides, sevin and malathion.
	120-180	Organic chlorides by Dexsil Field Analysis Kit.
	6	Geotechnical analysis.
Surface Water	5	TCL volatile organics, semi-volatile organics, pesticides, sevin, malathion, arsenic, lead, chromium, cadmium, hardness, dissolved organic carbon, field pH, field temperature, field specific conductance.
Sediment	5	TCL volatile organics, semi-volatile organics, pesticides, Sevin, Malathion, arsenic, lead, chromium, cadmium, total organic carbon, pH.
Groundwater	≈10	TCL volatile organics, semi-volatile organics, pesticides, Sevin, Malathion, arsenic, lead, chromium, cadmium, field pH, field temperature, field specific conductance.
Test Pits (Soil)	10-25	TCL volatile organics, semi-volatile organics, pesticides, sevin, malathion, arsenic, lead, chromium, and cadmium.
Air	1	TCL pesticides.
Building 5 Trench	1	TCL volatile organics, semi-volatile organics, pesticides, sevin, malathion, arsenic, lead, chromium, and cadmium.
Underground Storage Tank	3	Total petroleum hydrocarbons.

FIGURES

FIGURES

CAD FILE NUMBER 90-719-A8

CHECKED BY NCS 4-23-93
APPROVED BY WO 4-23-93

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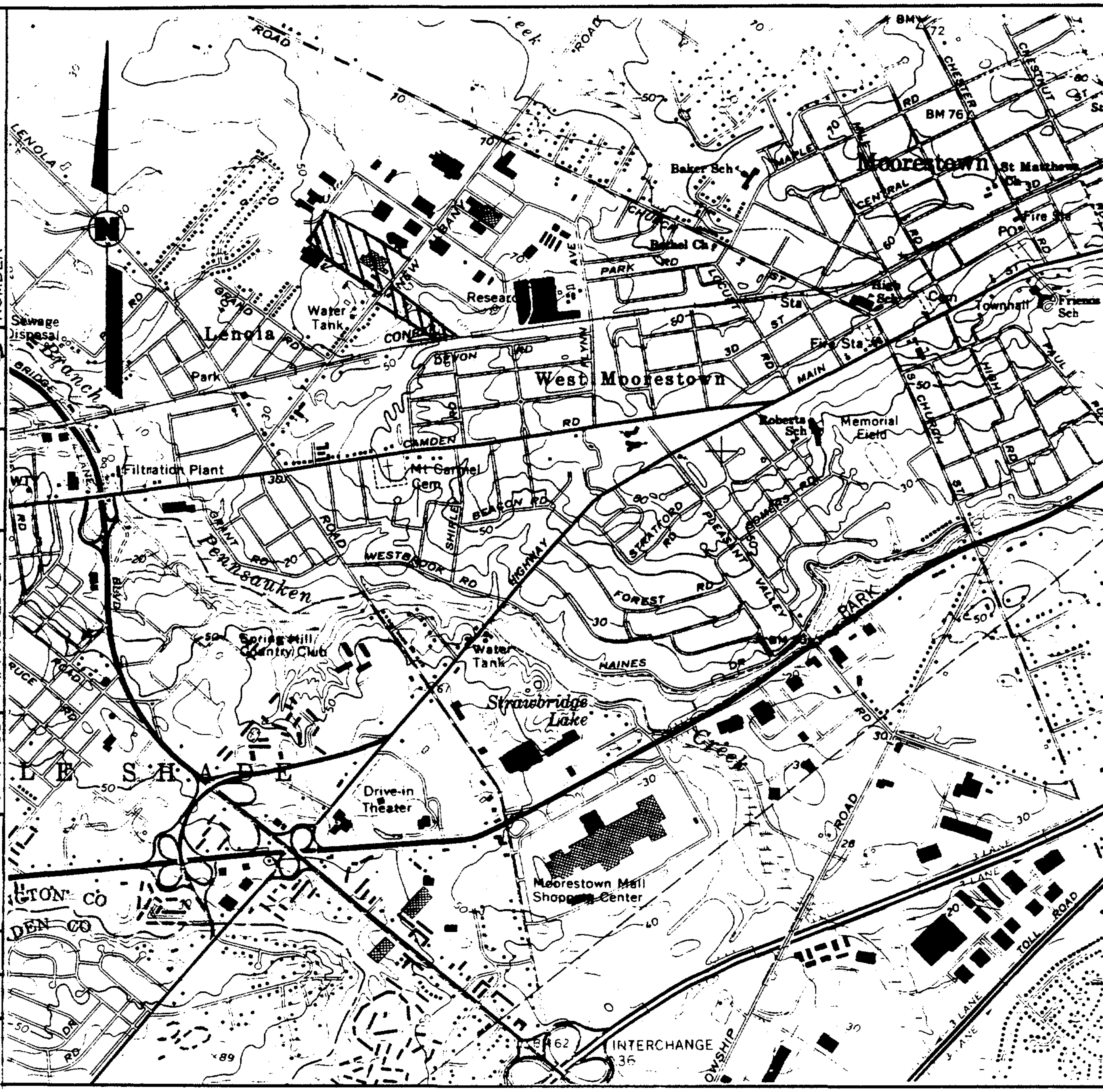
PLOT 1:1



APPROXIMATE SCALE

2000 0 2000 FEET

FIGURE 1

SITE LOCATION MAP

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LEGEND:

PULVERIZING SERVICES SITE LOCATION

300323

REFERENCE:
UNITED STATES GEOLOGIC SURVEY,
MOORESTOWN, N.J. QUADRANGLE,
PHOTOREVISED 1981.

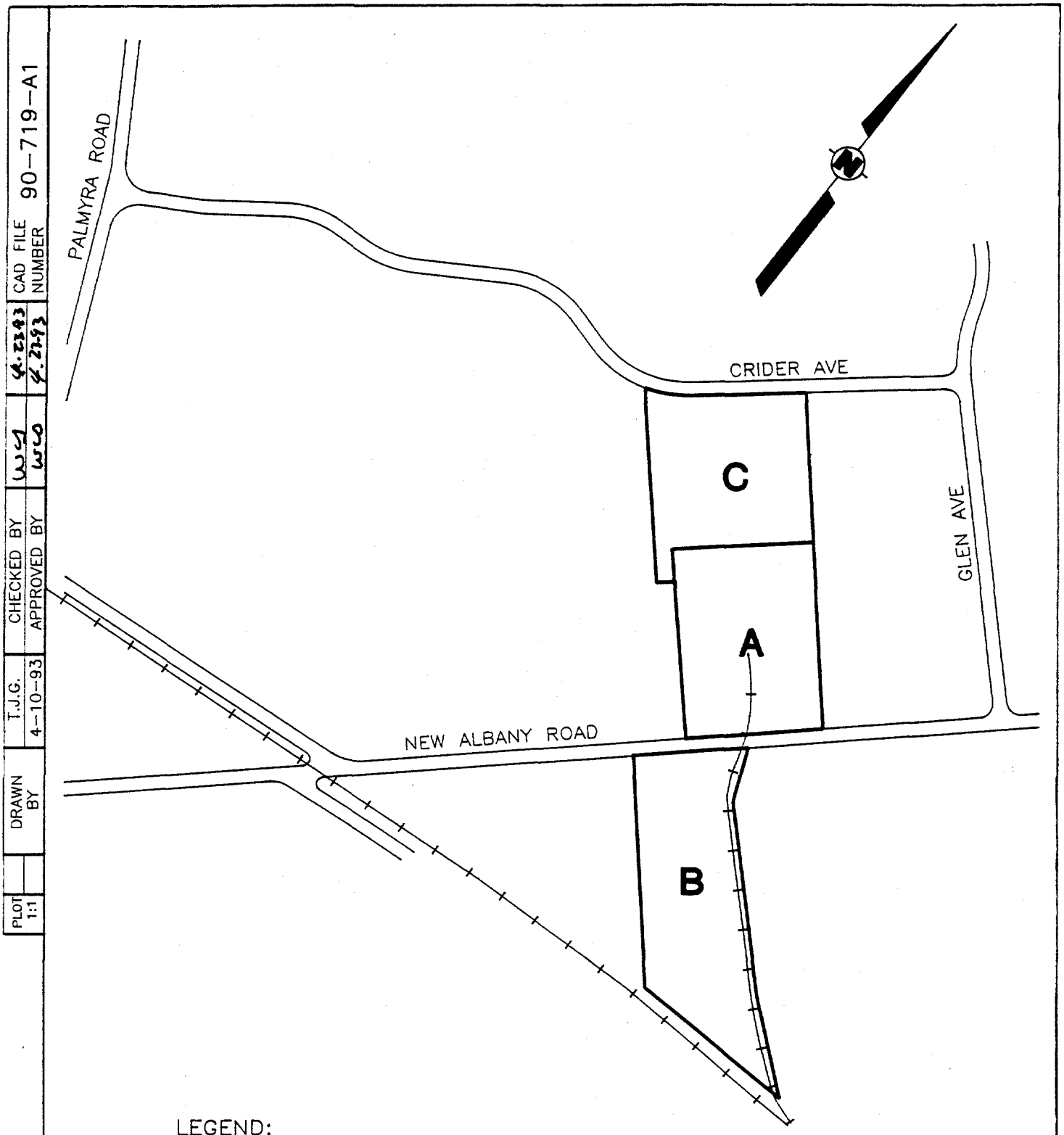


FIGURE 2
SITE PLAN
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY
PREPARED FOR
PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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CAD FILE NUMBER	90-719-A1
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	4.27.93
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300324

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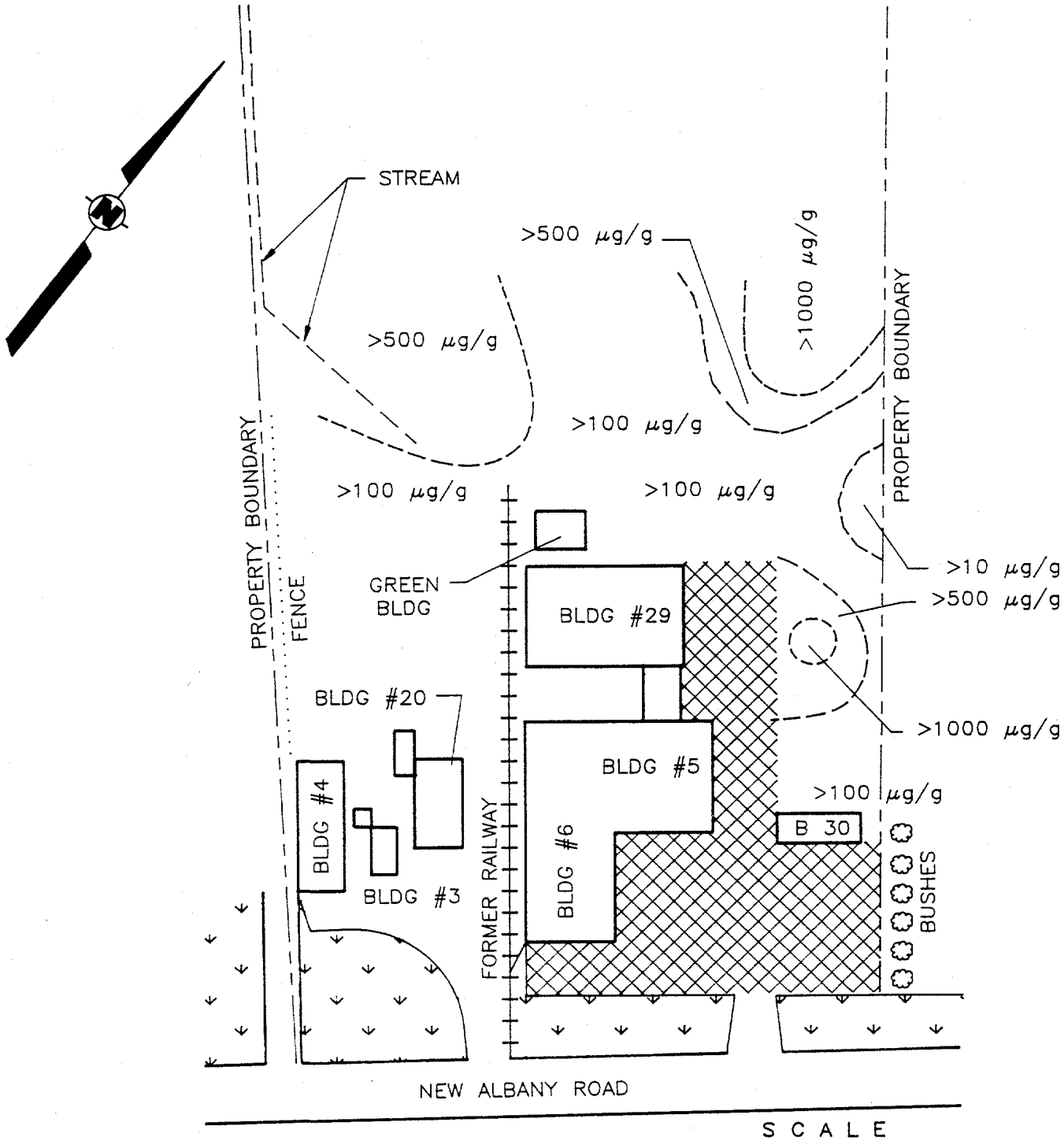

LEGEND:

------ CONCENTRATION CONTOUR DICHLORO-DIPHENYL COMPOUNDS (SURFACE)

PAVED AREAS

NOTE:

µg/g = mg/kg

REFERENCE:

USEPA, MARCH 25, 1988 MEMO.

FIGURE 3

USEPA TAT SURFACE SOIL RESULTS

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

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300325

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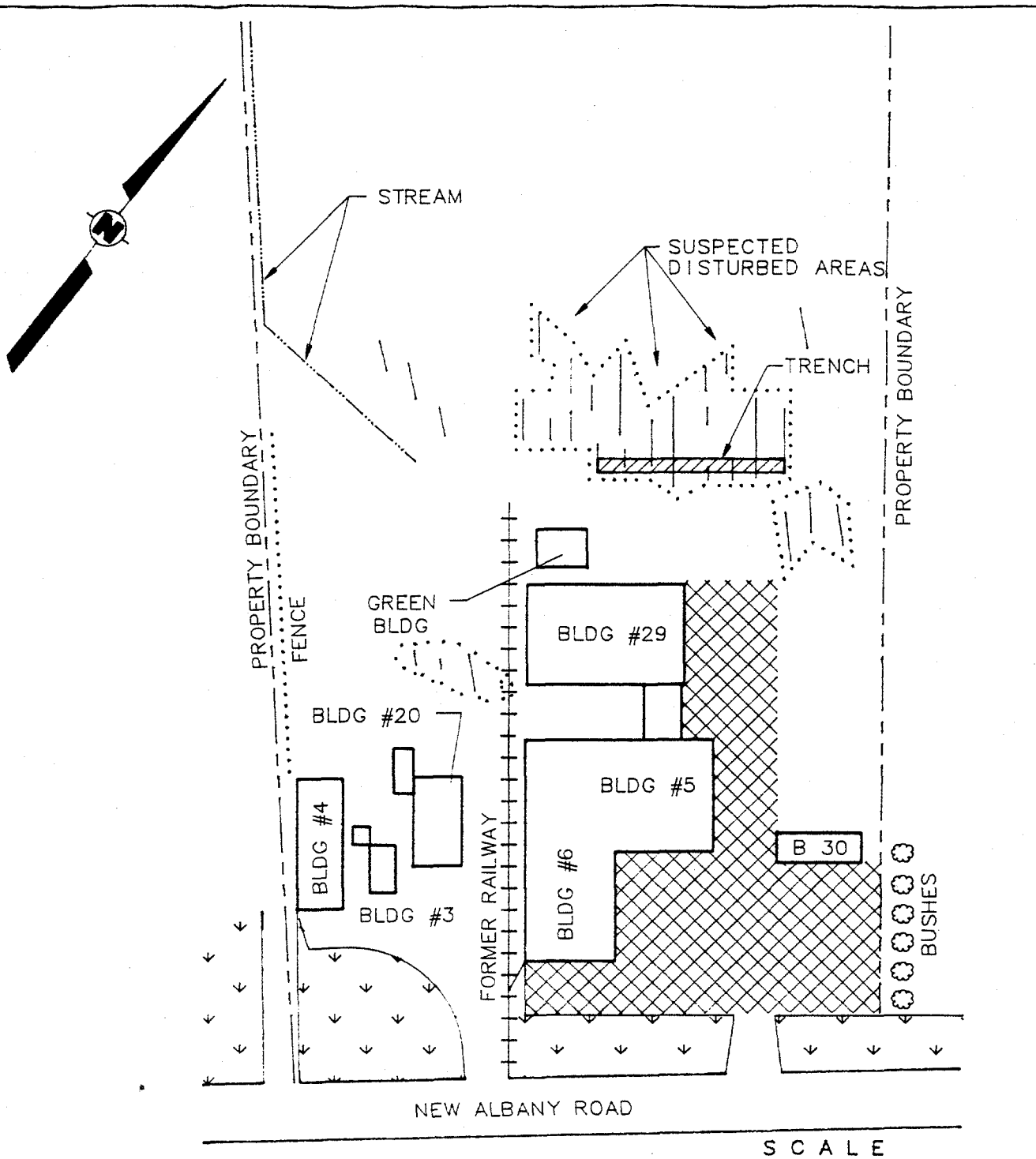

LEGEND:

GPR ANOMALY

PAVED AREAS

FIGURE 4

USEPA GPR SURVEY RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

REFERENCE:

USEPA, MARCH 25, 1988 MEMO.

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300326

EPA REGION II
SCANNING TRACKING SHEET

DOC ID # 38783

DOC TITLE/SUBJECT:

FIGURE 5 – EVIDENCE OF WASTE DISPOSAL PRACTICES FROM AERIAL PHOTOGRAPHS

THIS DOCUMENT IS OVERSIZED AND CAN BE LOCATED IN THE ADMINISTRATIVE RECORD FILE AT THE

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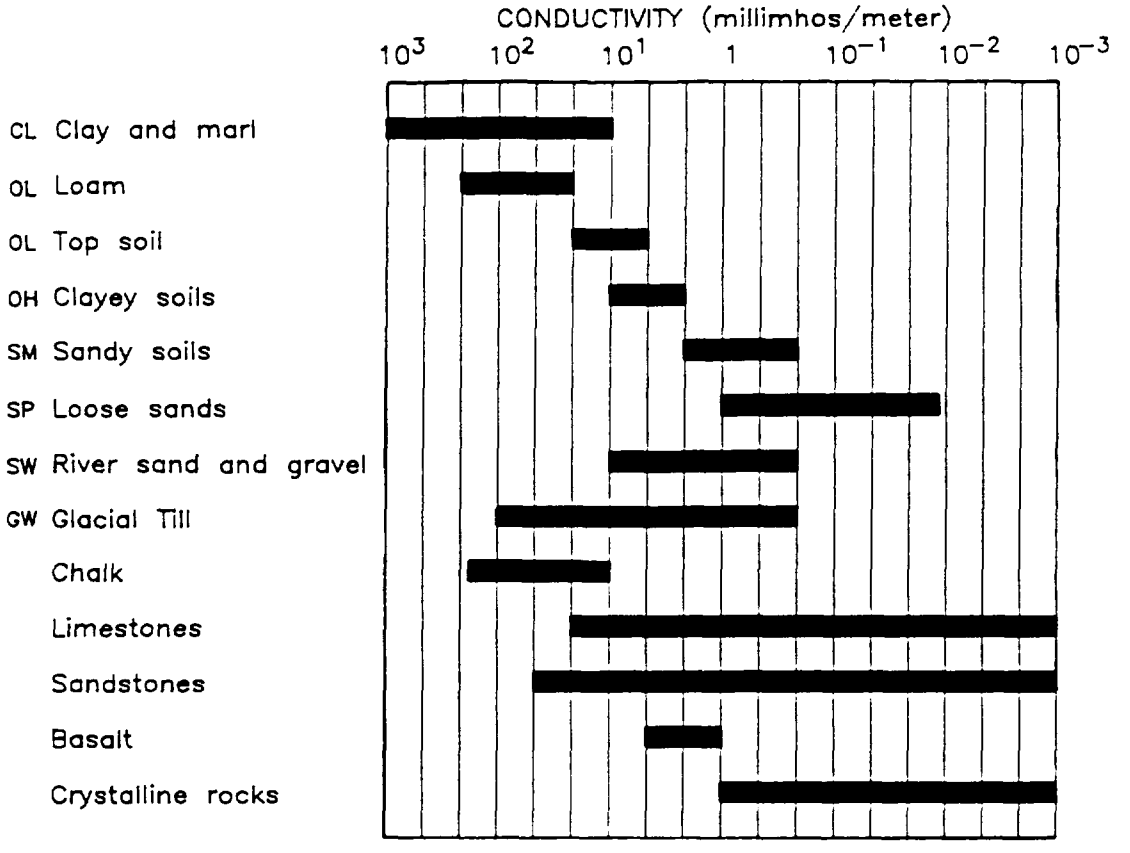

FIGURE 8

CONDUCTIVITY RANGES
FOR VARIOUS TERRAIN MATERIALS
PULVERIZING SERVICE SITE
MOORESTOWN, NEW JERSEY
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

REFERENCE:
MODIFIED FROM CULLEY et al. (1975)

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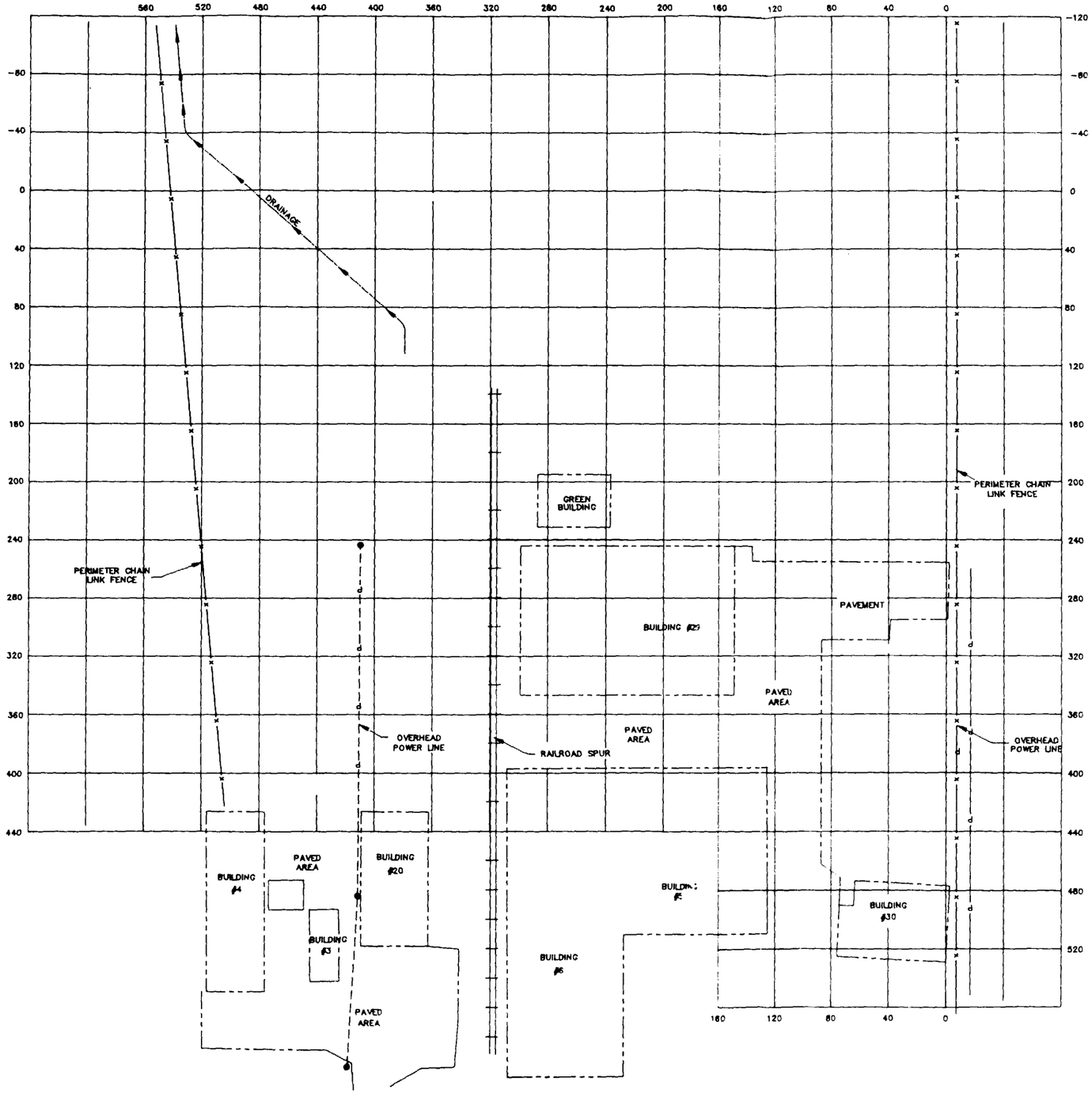
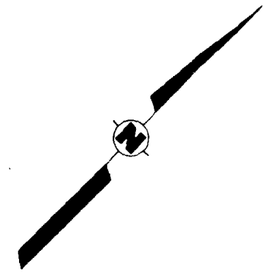
T.J.G. 4-10-93	CHECKED BY	WCS	4-23-93	CAD FILE NUMBER 90-719-E:
	APPROVED BY	WCS	4-23-93	

PLOT 5:1





SCALE
40 0 40 80 FEET

FIGURE 9
PLAN OF PHASE I STUDY AREA

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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DRN	T.J.G.	WCS	4-23-93
CHECKED BY		WCS	4-23-93
APPROVED BY			
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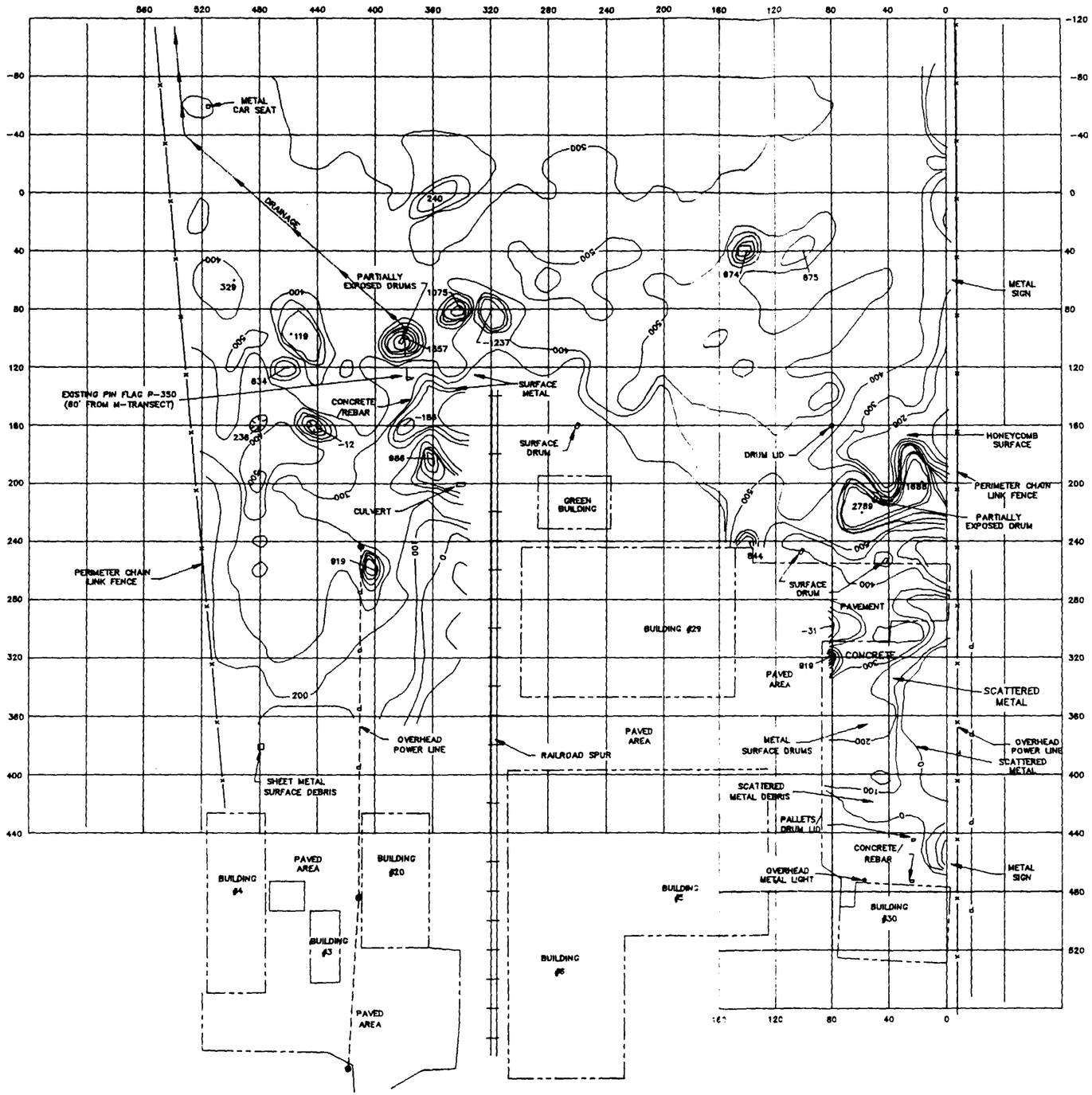

LEGEND:

500 CONTOURS OF EQUAL MAGNETOMETER RESPONSE (GAMMAS)

NOTES:

1. TO OBTAIN ACTUAL FIELD READINGS, 54,000 MUST BE ADDED TO DATA SHOWN.
2. NOT ALL CONTOUR LINES ARE SHOWN IN AREAS OF HIGH OR LOW READINGS.

SCALE
40 0 40 80 FEET

FIGURE 10

MAGNETOMETER SURVEY RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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300330

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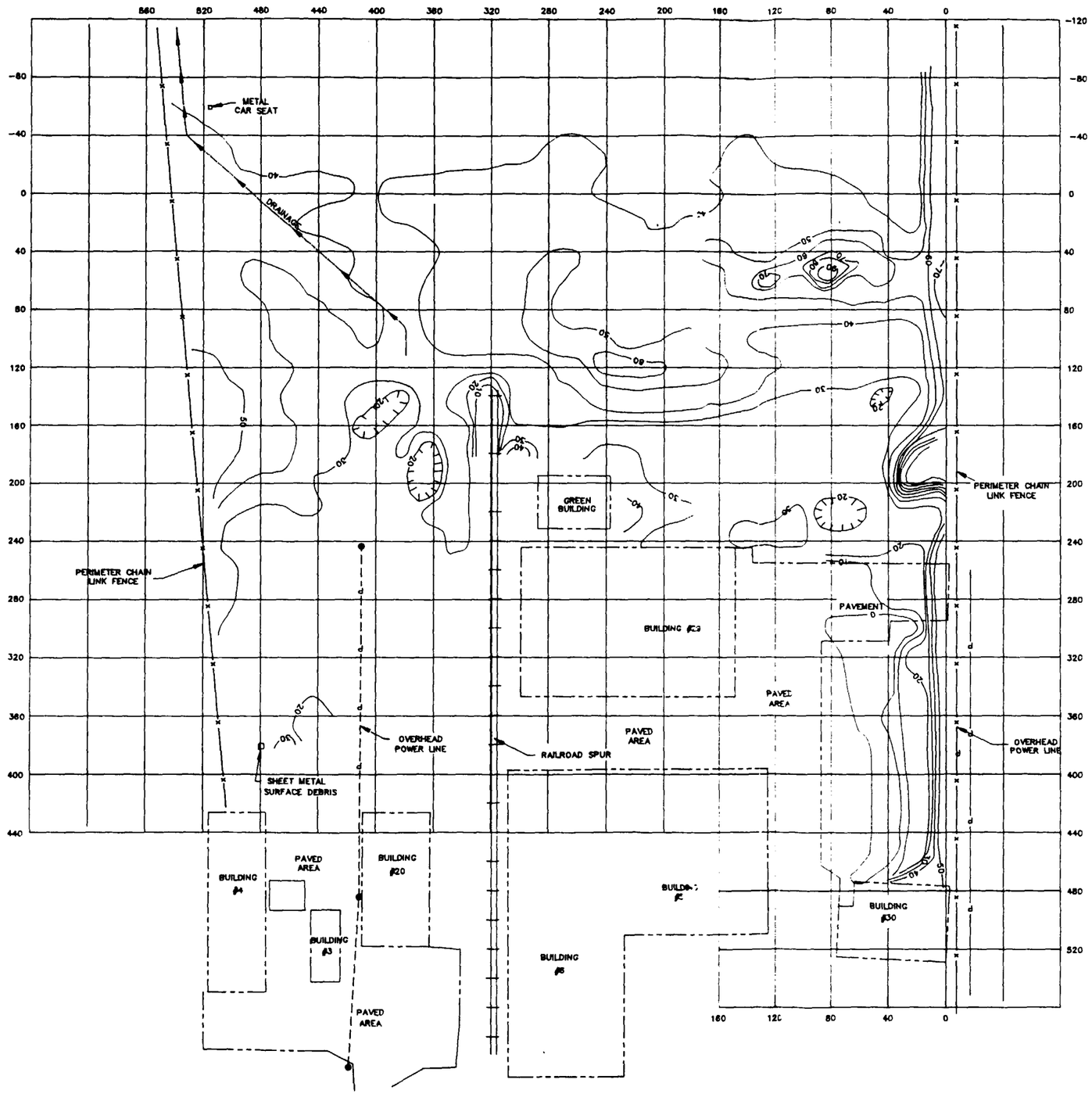
T.J.G.	APPROVED BY	WCS	4-23-93	
4-12-93				
PLOT .5:1				

300331



LEGEND:

20 — CONTOURS OF EQUAL CONDUCTIVITY (MILLIMHOS/METER

SCALE

40 0 40 80 FEET

FIGURE 11

EM SURVEY RESULTS

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
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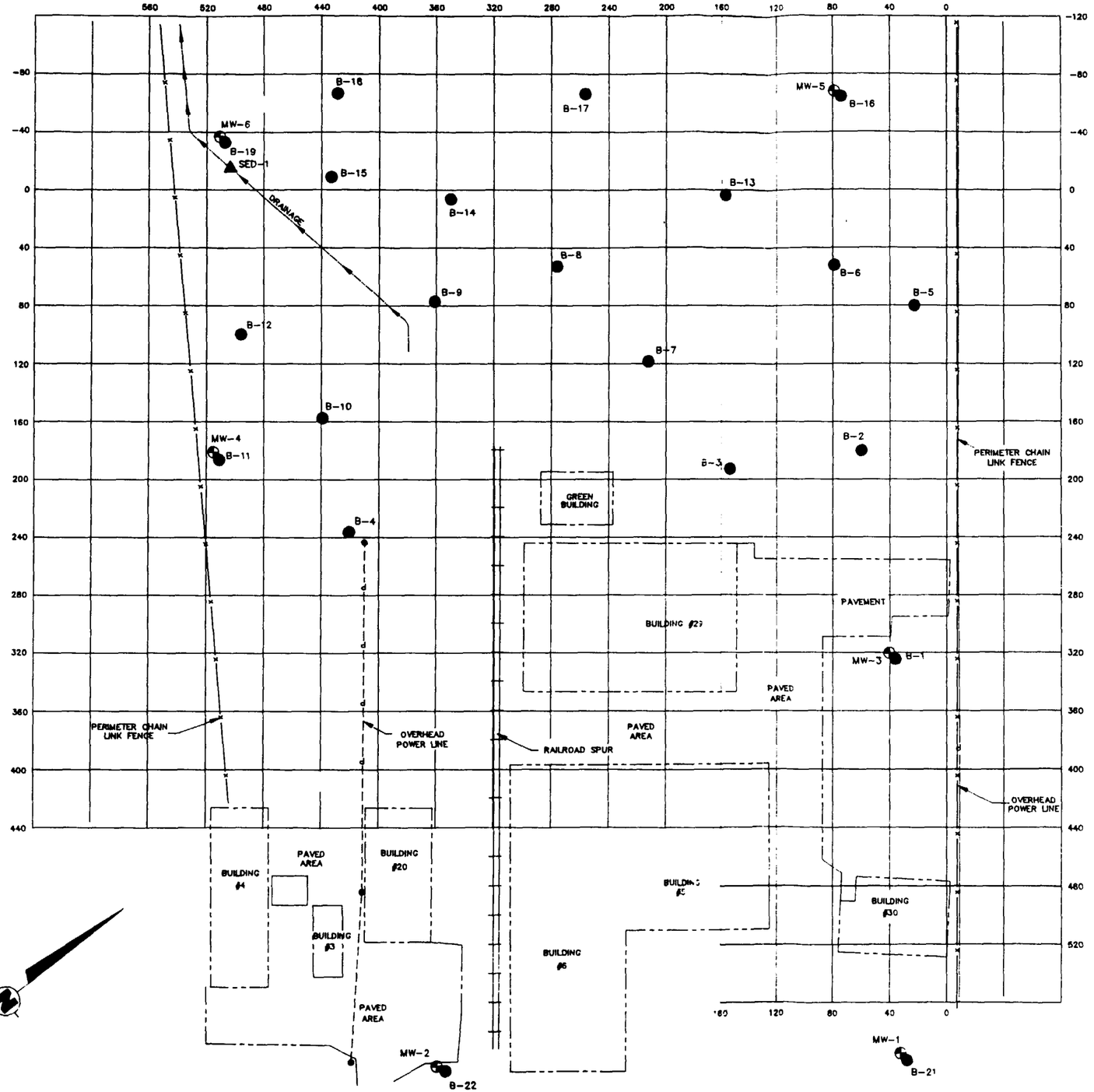
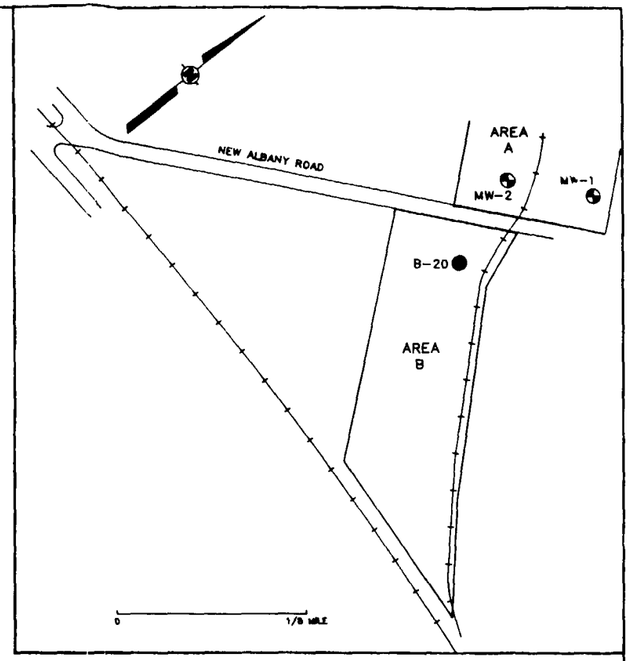
APPROVED BY	W.C.S.
CAD FILE NUMBER	90-719-E5





LEGEND:

- B-3 SOIL BORING
- MW-1 SHALLOW MONITORING WELL
- SED-1 SEDIMENT SAMPLING LOCATION

300332

SCALE
40 0 40 80 FEET

FIGURE 12
LOCATION OF BORINGS AND MONITORING WELLS

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC
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300333

T.J.G.	4-13-93	CAD FILE NUMBER	90-719-E6
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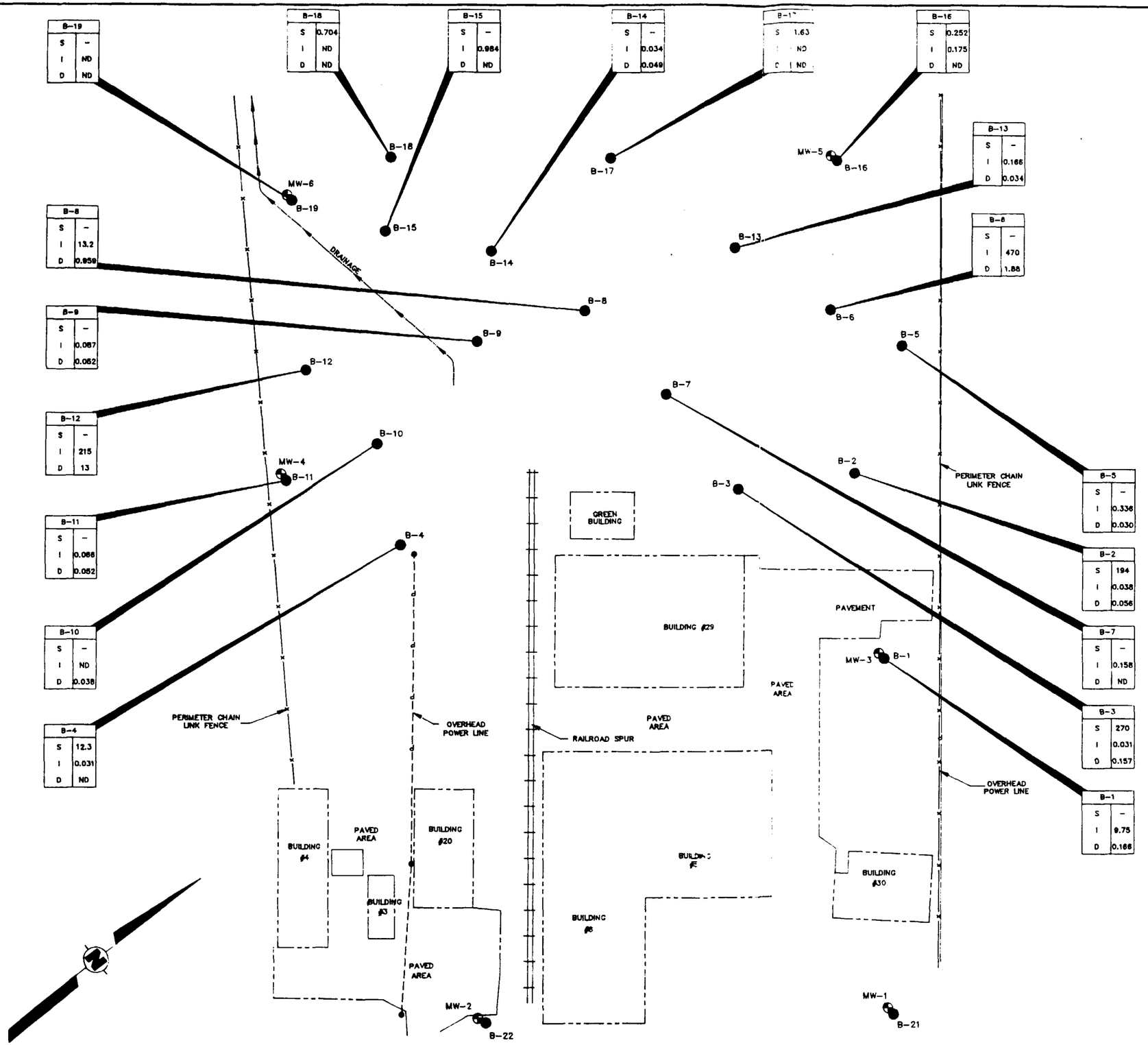
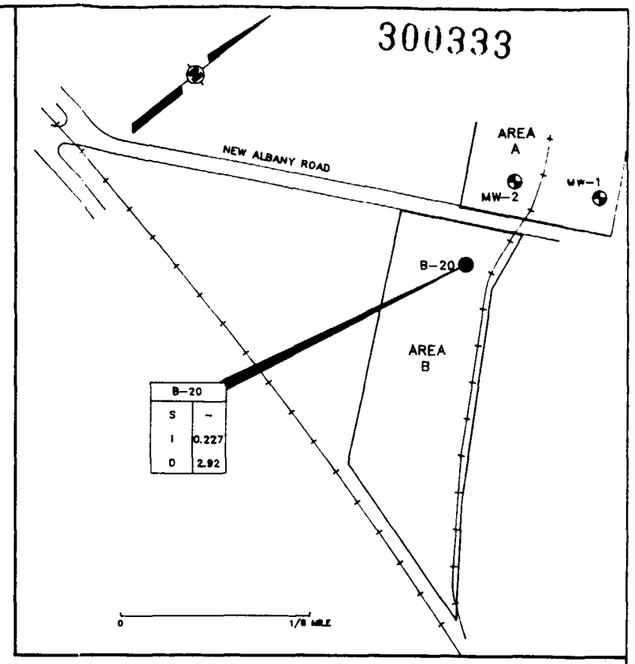
APPROVED BY	WCS	4/23/93	
PLOT .5:1			





LEGEND:

B-3	SOIL BORING
MW-1	SHALLOW MONITORING WELL
-	NO SAMPLE OBTAINED
ND	NOT DETECTED
S	SHALLOW
I	INTERMEDIATE
D	DEEP

NOTE:

1. ALL CONCENTRATIONS IN mg/kg.
2. SEE APPENDIX "E" FOR DETECTION LIMITS ON SAMPLES WITH ND.

SCALE

40 0 40 80 FEET

FIGURE 13

COMBINED DDD, DDE, AND DDT CONCENTRATIONS IN SOIL

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

90-719-E7

CAD FILE NUMBER

CHECKED BY

APPROVED BY

I.J.G. 4-13-93

DRAWN BY

PLOT .5:1

B-19	BHC	SEVIN	DIELDRIN
S	–	–	–
I	ND	ND	ND
D	ND	ND	ND

B-18	BHC	SEVIN	DIELDRIN
S	ND	ND	ND
I	0.040	ND	ND
D	ND	ND	ND

B-15	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.087	1.1	ND
D	ND	ND	ND

B-14	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.054	0.50	ND
D	ND	ND	ND

B-17	BHC	SEVIN	DIELDRIN
S	0.018	ND	0.051
I	0.26	0.30	ND
D	ND	ND	ND

B-16	BHC	SEVIN	DIELDRIN
S	0.011	ND	0.040
I	ND	ND	ND
D	0.106	6.7	ND

B-13	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.015	0.20	ND
D	0.22	6.0	ND

B-8	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.10	ND	0.39
D	0.54	5.9	0.041

B-6	BHC	SEVIN	DIELDRIN
S	–	–	–
I	23	19	63.9
D	ND	0.80	0.74

B-9	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.062	2.2	ND
D	ND	ND	ND

B-12	BHC	SEVIN	DIELDRIN
S	–	–	–
I	ND	3.0	0.84
D	ND	4.5	ND

B-11	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.020	0.30	0.042
D	ND	ND	0.028

B-10	BHC	SEVIN	DIELDRIN
S	–	–	–
I	ND	0.10	ND
D	ND	ND	ND

B-4	BHC	SEVIN	DIELDRIN
S	ND	ND	ND
I	ND	ND	ND
D	ND	ND	ND

B-5	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.030	ND	0.019
D	ND	ND	ND

B-2	BHC	SEVIN	DIELDRIN
S	ND	ND	3.1
I	0.012	ND	0.022
D	0.080	ND	0.021

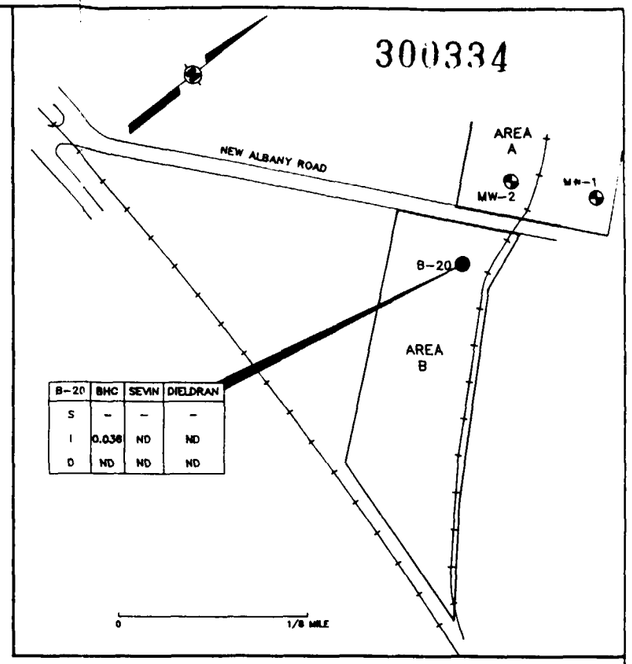
B-7	BHC	SEVIN	DIELDRIN
S	–	–	–
I	0.103	0.90	0.095
D	0.025	0.20	ND

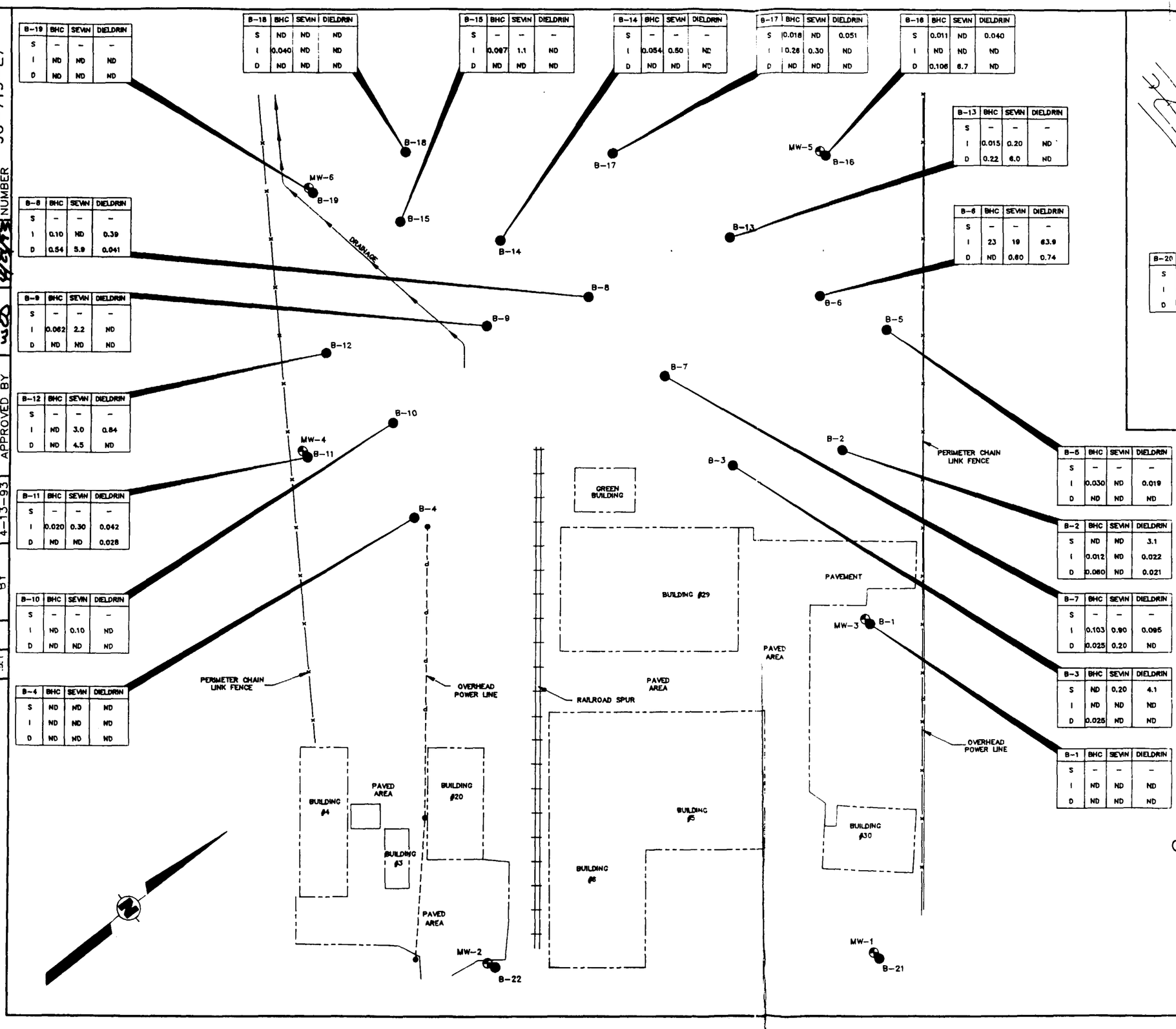
B-3	BHC	SEVIN	DIELDRIN
S	ND	0.20	4.1
I	ND	ND	ND
D	0.025	ND	ND

B-1	BHC	SEVIN	DIELDRIN
S	–	–	–
I	ND	ND	ND
D	ND	ND	ND

B-20	BHC	SEVIN	DIELDRAN
S	–	–	–
I	0.038	ND	ND
D	ND	ND	ND

300334





LEGEND:

B-3	SOIL BORING
MW-1	SHALLOW MONITORING WELL
–	NO SAMPLE OBTAINED
ND	NOT DETECTED
S	SHALLOW
I	INTERMEDIATE
D	DEEP

NOTE:

1. ALL CONCENTRATIONS IN mg/kg.
2. SEE APPENDIX "E" FOR DETECTION LIMITS ON SAMPLES WITH ND

SCALE

40 0 40 80 FEET

FIGURE 14

CHEMICAL CONCENTRATIONS IN SOIL

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

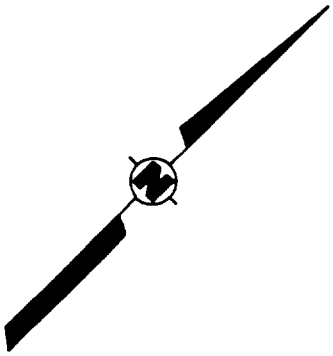
PREPARED FOR

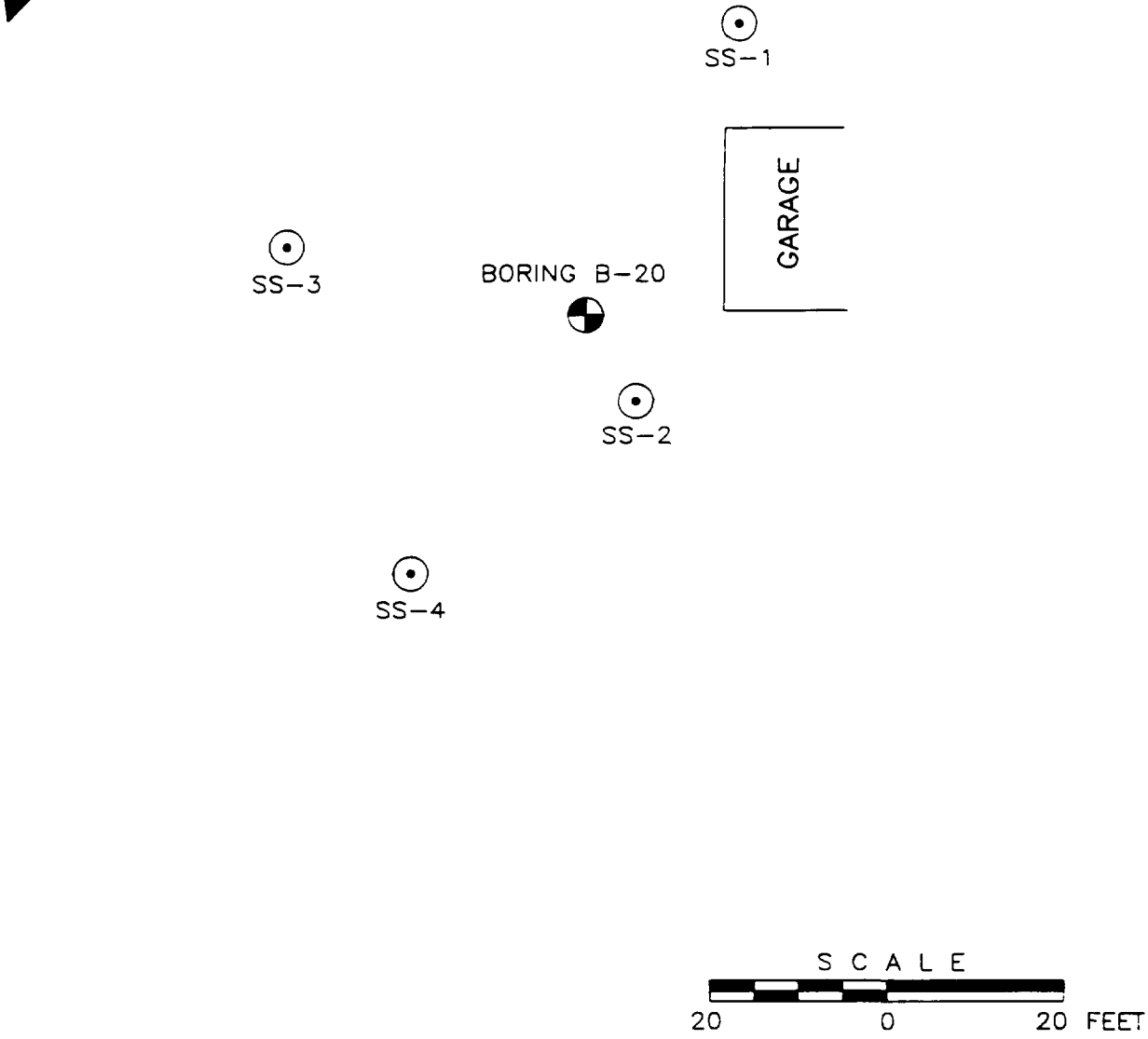
PPG INDUSTRIES, INC
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

PLOT 1:1	DRAWN BY	T.J.G. 4-12-93	CHECKED BY / APPROVED BY	WRS / WRS	#2352 / #2343	CAD FILE NUMBER 90-719-A7

300335





SCALE

20 0 20 FEET

FIGURE 15

LOCATION OF SURFACE SOIL SAMPLES NEAR BORING B-20

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

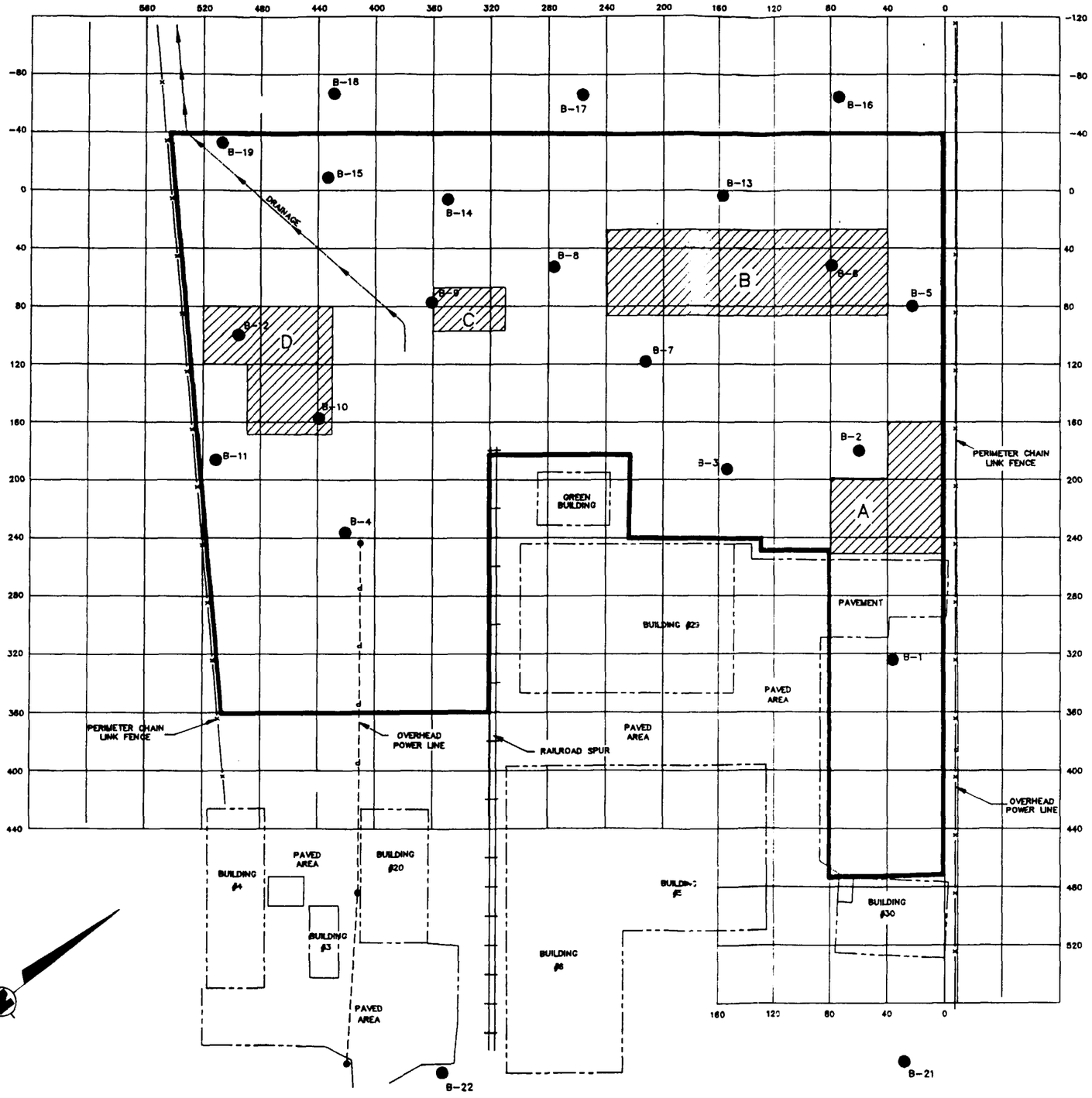
PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

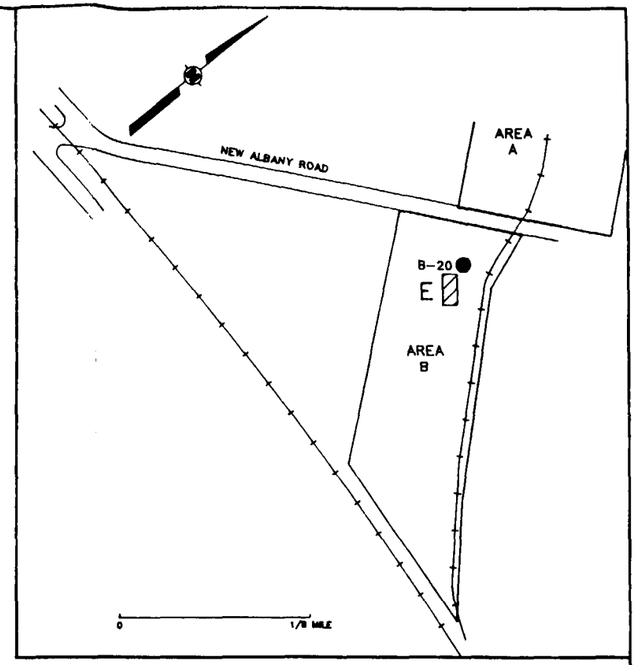
LEGEND:

⊙ SS-2 EXISTING SURFACE SOIL SAMPLING LOCATIONS

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHECKED BY	lacz	9.23.93	CAD FILE NUMBER 90-719-E13
APPROVED BY	CWC5	9.23.93	
DRAWN BY	I.J.G. 4-13-93		
PLOT	.5:1		





300336

LEGEND:

- B-3 EXISTING SOIL BORING
- AREA OF SURFACE SOIL EXCAVATION
- E ADDITIONAL EXCAVATION AREAS

SCALE

40 0 40 80 FEET

FIGURE 16
POTENTIAL REMEDIATION AREAS

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

EPA REGION II
SCANNING TRACKING SHEET

DOC ID # 38783

DOC TITLE/SUBJECT:

FIGURE 17 – PROPOSED PHASE II SAMPLING LOCATIONS
SHEET 1 OF 2

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290 BROADWAY, 18TH FLOOR
NEW YORK, NY 10007

EPA REGION II
SCANNING TRACKING SHEET

DOC ID # 38783

DOC TITLE/SUBJECT:

FIGURE 18 – PROPOSED PHASE II SAMPLING LOCATIONS
SHEET 2 OF 2

THIS DOCUMENT IS OVERSIZED AND CAN BE LOCATED IN THE ADMINISTRATIVE RECORD FILE AT THE

SUPERFUND RECORDS CENTER
290 BROADWAY, 18TH FLOOR
NEW YORK, NY 10007

PLOT	DRAWN BY	T.J.G. 4-14-93	CHECKED BY / APPROVED BY	UCS UCS	4.23.93 4.23.93	CAD FILE NUMBER 90-719-A9
1:1						

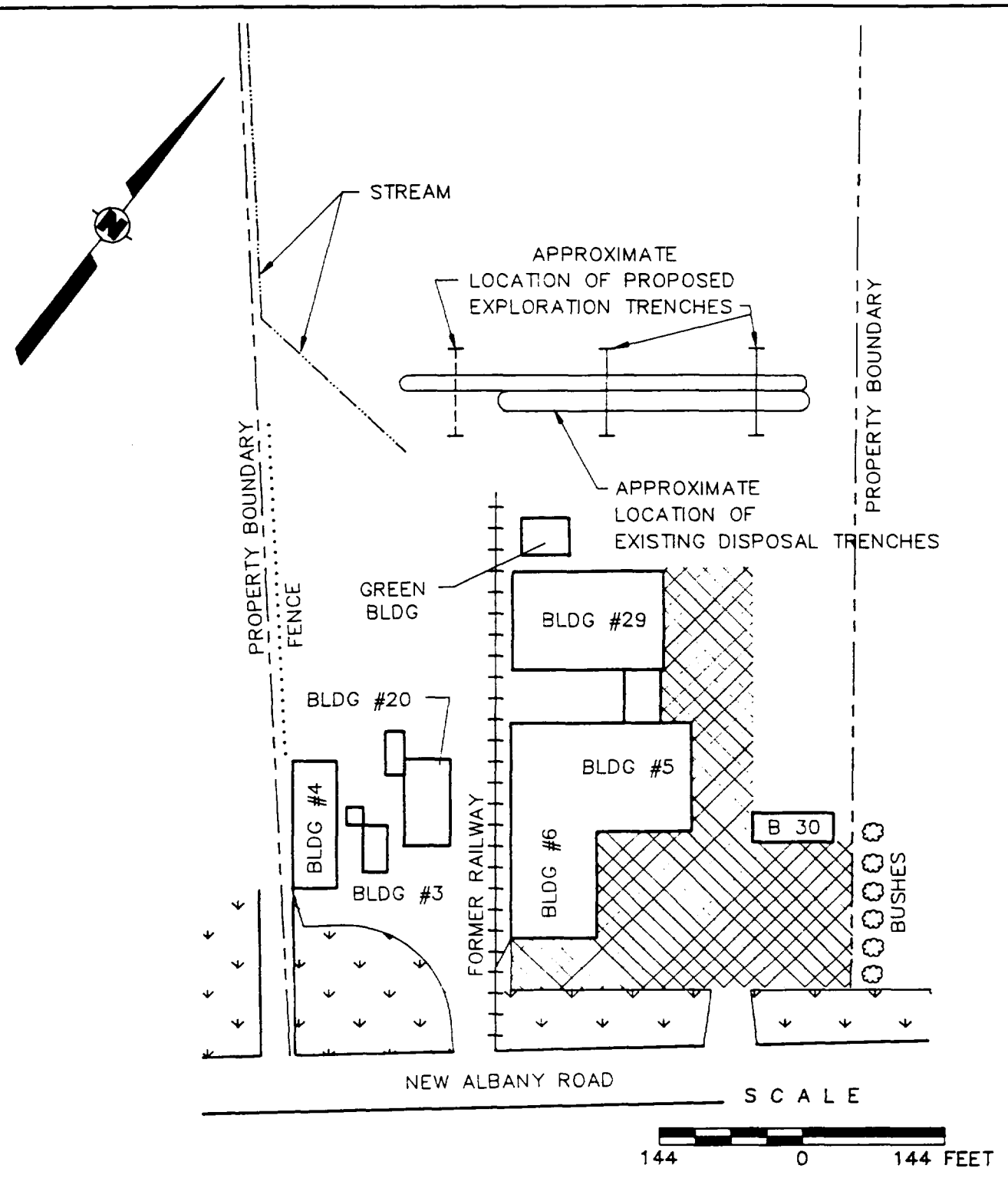

FIGURE 19

PROPOSED EXPLORATION TRENCH LOCATIONS

PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

LEGEND

PAVED AREAS

Paul C. Rizzo Associates, Inc.
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APPENDIX A

APPENDIX A

SUMMARY OF PREVIOUS DATA

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM	10:50AM			11:35AM	10:25AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-2	24559-3	24559-4	24559-5	24559-11	24560-1
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #2	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1	SFC WTR #1
	FIELD LOCATION.....							
	DEPTH, FT.....							
	PARCEL LOCATION.....							
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SEDIMENT	SFC WATER
	INORGANICS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/L
	Aluminum	1,738	3031	231	699	1108	5449	69980
	Antimony	12U	11U	13U	13U	12U	20U	19U
	Arsenic	13.00	5.8U	23	6.8U	158	13	10U
	Barium	55	36	4	46	189	55	15
	Beryllium	0.30	0.3	0.1U	0.1	0.1	0.5	9.1
	Cadmium	2.60	3.3	2.0U	3.9	3	4.9	8.9
	Calcium	848	67	481	85	240	243	111800
	Chromium	9	6	3	5	71	20	55
	Cobalt	2	2	2	2	2	3	79
	Copper	15	3	19	23	143	114	85
	Iron	10,063	1257	9815	2901	25208	50085	8949
	Lead	86	5.9	36	15	1239	64	5.0U
	Magnesium	117	138	63	99	111	322	20930
	Manganese	13	6	12	9	24	107	2828
	Mercury	0.10	0.1U	0.1U	0.3	2.7	1.6	0.4U
	Nickel	11U	10U	12U	12U	18	19U	57
	Potassium	527	383U	451U	451U	3334	700U	2096
	Selenium	3.2U	2.9U	3.4U	3.4U	3.2U	32	10.6
	Silver	1.0U	0.9U	1.1U	1.1U	5.4U	1.7U	4.6
	Sodium	42	29	327	15	280	86	7285
	Thallium	6U	6U	7U	7U	7U	11U	19U
	Tin	12U	11U	13U	13U	17	20U	7
	Vanadium	16.80	7.4	1.2U	5.7	14.7	16.7	1187
	Zinc	12	59	19	11	171	74	10U
	Cyanide	1.3U	1.2U	1.4U	1.4U	1.3U	2.1U	12U
	Total Phenol							
	Sulfur (percent)							

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limits.

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	4/22/86	4/22/86	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME	10:30AM	10:30AM					
	SAMPLE EVENT	NJDEP SI	NJDEP SI	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL					
	LAB SAMPLE ID NO.	24560-2	24560-3	7600-A	7600-B	7600-C	7600-D	7599-A
	FIELD SAMPLE ID NO.	TRIP BLANK	FIELD BLANK					
	FIELD LOCATION			1	1	1	1	2
	DEPTH, FT			SURFACE	1	3	6	SURFACE
	PARCEL LOCATION			A	A	A	A	A
CAS NUMBER	MATRIX	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL
	INORGANICS	ug/L	ug/L	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Aluminum	15U	15U					
	Antimony	19U	19U					
	Arsenic	10U	10U	5600	11000	3200	1200	50000
	Barium	1	1					
	Beryllium	0.1U	0.1U					
	Cadmium	3.0U	3.3					
	Calcium	47	48					
	Chromium	3	3					
	Cobalt	2.6U	2.6U					
	Copper	2	3					
	Iron	19	93					
	Lead	14.3	27	74000	56000	28000	19000	140000
	Magnesium	26	20U					
	Manganese	1	1					
	Mercury	0.2U	0.2U					
	Nickel	18U	18U					
	Potassium	658U	658U					
	Selenium	5.0U	5.0U					
	Silver	1.6U	1.6U					
	Sodium	36	28					
	Thallium	10U	10U					
	Tin	19U	19U					
	Vanadium	1.7U	1.7U					
	Zinc	5	13					
	Cyanide	10U	10U					
	Total Phenol	6U	6U					
	Sulfur (percent)			0.09%	0.02%	0.012%	0.003%	0.087%

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limi

300343

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

CAS NUMBER								
	DATE	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME							
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY							
	LAB SAMPLE ID NO	7599-B	7599-C	7599-D	7598-A	7598-B	7598-C	7597-A
	FIELD SAMPLE ID NO							
	FIELD LOCATION	2	2	2	3	3	3	4
	DEPTH, FT	1	3	5	SURFACE	1	3	SURFACE
	PARCEL LOCATION	A	A	A	A	A	A	A
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	INORGANICS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Aluminum							
	Antimony							
	Arsenic	33000	3800	2700	9900	9700	61000	9600
	Barium							
	Beryllium							
	Cadmium							
	Calcium							
	Chromium							
	Cobalt							
	Copper							
	Iron							
	Lead	120000	ND	ND	25000	14000	48000	48000
	Magnesium							
	Manganese							
	Mercury							
	Nickel							
	Potassium							
	Selenium							
	Silver							
	Sodium							
	Thallium							
	Tin							
	Vanadium							
	Zinc							
	Cyanide							
	Total Phenol							
	Sulfur (percent)	0.98%	0.054%	0.051%	0.11%	0.018%	0.17%	0.15%

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limi

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME							
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY							
	LAB SAMPLE ID NO.	7597-B	7597-C	7597-D	5897-A	5897-B	5897-C	5897-D
	FIELD SAMPLE ID NO.							
	FIELD LOCATION	4	4	4	5	5	5	5
	DEPTH, FT	1	3	5	SURFACE	1	3	5
	PARCEL LOCATION	A	A	A	A	A	A	A
CAS NUMBER	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	INORGANICS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Aluminum							
	Antimony							
	Arsenic	11000	2100	1700	210000	100000	65000	8500
	Barium							
	Beryllium							
	Cadmium							
	Calcium							
	Chromium							
	Cobalt							
	Copper							
	Iron							
	Lead	39000	17000	28000	230000	30000	50000	13000
	Magnesium							
	Manganese							
	Mercury							
	Nickel							
	Potassium							
	Selenium							
	Silver							
	Sodium							
	Thallium							
	Tin							
	Vanadium							
	Zinc							
	Cyanide							
	Total Phenol							
	Sulfur (percent)	0.04%	0.028%	0.01%	0.61%	0.06%	0.07%	0.02%

30l345

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limi

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME							
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY							
	LAB SAMPLE ID NO.	5898-A	5898-B	5898-C	5898-D	5896-A	5896-B	5896-C
	FIELD SAMPLE ID NO.							
	FIELD LOCATION	5	5	5	5	6	6	6
	DEPTH, FT	SURFACE	1	3	5	SURFACE	1	3
	PARCEL LOCATION	A	A	A	A	A	A	A
CAS NUMBER	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	INORGANICS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Aluminum							
	Antimony							
	Arsenic	170000	82000	59000	8800	4500	130000	8300
	Barium							
	Beryllium							
	Cadmium							
	Calcium							
	Chromium							
	Cobalt							
	Copper							
	Iron							
	Lead	220000	36000	89000	ND	23000	91000	25000
	Magnesium							
	Manganese							
	Mercury							
	Nickel							
	Potassium							
	Selenium							
	Silver							
	Sodium							
	Thallium							
	Tin							
	Vanadium							
	Zinc							
	Cyanide							
	Total Phenol							
	Sulfur (percent)	0.48%	0.07%	0.13%	0.03%	0.04%	1.1%	0.026%

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limi

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME							
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY							
	LAB SAMPLE ID NO.	5896-D	5887-A	5887-B	5887-C	5887-D	5895-A	5895-B
	FIELD SAMPLE ID NO.							
	FIELD LOCATION	6	7	7	7	7	8	8
	DEPTH, FT	5	SURFACE	1	3	5	SURFACE	1
	PARCEL LOCATION	A						
CAS NUMBER	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	INORGANICS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Aluminum							
	Antimony							
	Arsenic	3900	8700	4700	9000	16000	5600	3800
	Barium							
	Beryllium							
	Cadmium							
	Calcium							
	Chromium							
	Cobalt							
	Copper							
	Iron							
	Lead	18000	44000	23000	25000	35000	34000	24000
	Magnesium							
	Manganese							
	Mercury							
	Nickel							
	Potassium							
	Selenium							
	Silver							
	Sodium							
	Thallium							
	Tin							
	Vanadium							
	Zinc							
	Cyanide							
	Total Phenol							
	Sulfur (percent)	0.02%	0.009%	0.006%	0.01%	0.014%	0.003%	0.006%

300347

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limi

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME							
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY							
	LAB SAMPLE ID NO.	5895-C	5895-D	5894-A	5894-B	5893-A	5893-B	5893-C
	FIELD SAMPLE ID NO.							
	FIELD LOCATION	8	8	9	9	10	10	10
	DEPTH, FT	3	4	SURFACE	1	SURFACE	1	3
	PARCEL LOCATION							
CAS NUMBER	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	INORGANICS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Aluminum							
	Antimony							
	Arsenic	3700	3300	1100	7700	1300	ND	1000
	Barium							
	Beryllium							
	Cadmium							
	Calcium							
	Chromium							
	Cobalt							
	Copper							
	Iron							
	Lead	24000	24000	8700	16000	18000	5600	17000
	Magnesium							
	Manganese							
	Mercury							
	Nickel							
	Potassium							
	Selenium							
	Silver							
	Sodium							
	Thallium							
	Tin							
	Vanadium							
	Zinc							
	Cyanide							
	Total Phenol							
	Sulfur (percent)	0.003%	0.003%	1.2%	0.032%	0.07%	96%	0.45%

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limi

TABLE A - 1
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME							
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY							
	LAB SAMPLE ID NO.	5893-D	5892-A	5892-B	5891-A	5891-B	5890-A	5889-A
	FIELD SAMPLE ID NO.							
	FIELD LOCATION	10	11	11	12	12	13	14
	DEPTH, FT	5	SURFACE	1	SURFACE	1	SURFACE	SURFACE
	PARCEL LOCATION							
CAS NUMBER	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	INORGANICS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Aluminum							
	Antimony							
	Arsenic	3400	800	2900	4600	1700	54000	6800
	Barium							
	Beryllium							
	Cadmium							
	Calcium							
	Chromium							
	Cobalt							
	Copper							
	Iron							
	Lead	22000	9300	21000	59000	21000	23000	100000
	Magnesium							
	Manganese							
	Mercury							
	Nickel							
	Potassium							
	Selenium							
	Silver							
	Sodium							
	Thallium							
	Tin							
	Vanadium							
	Zinc							
	Cyanide							
	Total Phenol							
	Sulfur (percent)	3.2%	1.2%	0.086%	0.23%	0.046%	0.87%	0.41%

Notes:

U Compound was not detected.
ug/L Microgram per liter.
ug/kg Micrograms per kilogram
mg/kg Milligram per kilogram.
[#] Compound detected above detection limi

TABLE A - 2
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SEVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM			11:35AM	10:25AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-3	24559-4	24559-5	24559-11
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1
	FIELD LOCATION.....					
	DEPTH, FT.....					
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
	ORGANICS - VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
74-87-3	Chloromethane	10U	10U	10U	10U	10U
74-83-9	Bromomethane	10U	10U	10U	10U	10U
75-01-4	Vinyl Chloride	10U	10U	10U	10U	10U
75-00-3	Chloroethane	10U	10U	10U	10U	10U
75-09-2	Methylene Chloride	2J	9	2J	19	8
67-64-1	Acetone	10B	930B	61B	12B	16B
75-15-0	Carbon Disulfide	5U	5U	200	5U	5U
75-35-4	1,1-Dichloroethene	5U	5U	5U	5U	5U
75-34-3	1,1-Dichloroethane	5U	5U	5U	5U	5U
156-60-5	Trans-1,2-Dichloroethane	5U	5U	5U	5U	5U
67-66-3	Chloroform	5U	5U	5U	5U	5U
107-06-2	1,2-Dichloroethane	5U	5U	5U	5U	5U
78-93-3	2-Butanone	7JB	20B	14B	9JB	9JB
71-55-5	1,1,1-Trichloroethane	5U	5U	5U	5U	2J
56-23-5	Carbon Tetrachloride	5U	5U	5U	5U	5U
108-05-4	Vinyl Acetate	10U	10U	10U	10U	10U
75-27-4	Bromodichloromethane	5U	5U	5U	5U	5U
78-87-5	1,2-Dichloropropane	5U	5U	5U	5U	5U
10061-02-6	Trans-1,3-Dichloropropane	5U	5U	5U	5U	5U
79-01-6	Trichloroethene	5U	5U	5U	5U	5U
124-48-1	Dibromochloromethane	5U	5U	5U	5U	5U
79-00-5	1,1,2-Trichloroethane	5U	5U	5U	5U	5U

TABLE A - 2
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SEVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM			11:35AM	10:25AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-3	24559-4	24559-5	24559-11
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1
	FIELD LOCATION.....					
	DEPTH, FT.....					
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
	ORGANICS - VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
71-43-2	Benzene	5U	5U	5U	5U	8
10061-01-5	cis-1,3-Dichloropropene	5U	5U	5U	5U	5U
110-75-8	2-Chloroethylvinylether	10U	10U	10U	10U	10U
75-25-2	Bromoform	5U	5U	5U	5U	5U
108-10-1	4-Methyl-2-Pentanone	10U	10U	10U	10U	10U
591-78-6	2-Hexanone	10U	10U	10U	10U	10U
127-18-4	Tetrachloroethane	10	5U	2J	5U	11
79-34-5	1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U
108-88-3	Toluene	5U	81	7	2J	5U
108-90-7	Chlorobenzene	5U	2J	2J	3J	14
100-41-4	Ethylbenzene	5U	5U	5U	5U	16
100-42-5	Styrene	5U	5U	5U	5U	5U
	Total Xylenes	5U	25	5U	5U	270

Notes:

U Compound was not detected.
J Estimated value.
B Analyte also detected in blank.
ug/kg Microgram per kilogram.
ug/L Microgram per liter.
[#] Compound detected above detection limits.

300351

TABLE A - 2
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SEVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM	10:30AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24560-1	24560-2	24560-3
	FIELD SAMPLE ID NO.....	SFC WTR #1	TRIP BLANK	FIELD BLANK
	FIELD LOCATION.....			
	DEPTH, FT.....			
	PARCEL LOCATION.....			
CAS NUMBER	MATRIX.....	SFC WATER	WATER	WATER
	ORGANICS - VOLATILES	ug/L	ug/L	ug/L
74-87-3	Chloromethane	10U	10U	10U
74-83-9	Bromomethane	10U	10U	10U
75-01-4	Vinyl Chloride	10U	10U	10U
75-00-3	Chloroethane	10U	10U	10U
75-09-2	Methylene Chloride	3J	2J	180
67-64-1	Acetone	8BJ	10B	9BJ
75-15-0	Carbon Disulfide	5U	5U	5U
75-35-4	1,1-Dichloroethene	5	5U	5U
75-34-3	1,1-Dichloroethane	5U	5U	5U
156-60-5	Trans-1,2-Dichloroethane	5U	5U	5U
67-66-3	Chloroform	5U	5U	5U
107-06-2	1,2-Dichloroethane	5U	5U	5U
78-93-3	2-Butanone	7BJ	7BJ	7BJ
71-55-5	1,1,1-Trichloroethane	79	5U	5U
56-23-5	Carbon Tetrachloride	5U	5U	5U
108-05-4	Vinyl Acetate	10U	10U	10U
75-27-4	Bromodichloromethane	5U	5U	5U
78-87-5	1,2-Dichloropropane	5U	5U	5U
10061-02-6	Trans-1,3-Dichloropropane	5U	5U	5U
79-01-6	Trichloroethene	5U	5U	5U
124-48-1	Dibromochloromethane	5U	5U	5U
79-00-5	1,1,2-Trichloroethane	5U	5U	5U

TABLE A - 2
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SEVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM	10:30AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24560-1	24560-2	24560-3
	FIELD SAMPLE ID NO.....	SFC WTR #1	TRIP BLANK	FIELD BLANK
	FIELD LOCATION.....			
	DEPTH, FT.....			
	PARCEL LOCATION.....			
CAS NUMBER	MATRIX.....	SFC WATER	WATER	WATER
	ORGANICS - VOLATILES	ug/L	ug/L	ug/L
71-43-2	Benzene	5U	5U	5U
10061-01-5	cis-1,3-Dichloropropene	5U	5U	5U
110-75-8	2-Chloroethylvinylether	10U	10U	10U
75-25-2	Bromoform	5U	5U	5U
108-10-1	4-Methyl-2-Pentanone	10U	10U	10U
591-78-6	2-Hexanone	10U	10U	10U
127-18-4	Tetrachloroethane	3J	5U	5U
79-34-5	1,1,2,2-Tetrachloroethane	5U	5U	5U
108-88-3	Toluene	5U	5U	5U
108-90-7	Chlorobenzene	5U	5U	5U
100-41-4	Ethylbenzene	5U	5U	5U
100-42-5	Styrene	5U	5U	5U
	Total Xylenes	5U	5U	5U

Notes:

U Compound was not detected.
J Estimated value.
B Analyte also detected in blank.
ug/kg Microgram per kilogram.
ug/L Microgram per liter.
[#] Compound detected above detection lim

TABLE A - 3
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM			11:35AM	10:25AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-3	24559-4	24559-5	24559-11
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1
	FIELD LOCATION.....					
	DEPTH, FT.....					
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
	ORGANICS - SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
108-95-2	Phenol	3300U	330000U	330000U	330000U	8300
111-44-4	bis(-2-Chloroethyl)Ether	3300U	330000U	330000U	330000U	3300U
95-57-8	2-Chlorophenol	3300U	330000U	330000U	330000U	3300U
541-73-1	1,3-Dichlorobenzene	3300U	330000U	330000U	330000U	3300U
106-46-7	1,4-Dichlorobenzene	3300U	330000U	330000U	330000U	3300U
100-51-6	Benzyl Alcohol	3300U	330000U	330000U	330000U	3300U
95-50-1	1,2-Dichlorobenzene	3300U	330000U	330000U	330000U	3300U
95-48-7	2-Methylphenol	3300U	330000U	330000U	330000U	3300U
39638-32-9	bis(2-chloroisopropyl)Ether	3300U	330000U	330000U	330000U	3300U
106-44-5	4-Methylphenol	3300U	330000U	330000U	330000U	3300U
621-64-7	N-Nitroso-Di-n-Propylamine	3300U	330000U	330000U	330000U	3300U
67-72-1	Hexachloroethane	3300U	330000U	330000U	330000U	3300U
98-95-3	Nitrobenzene	3300U	330000U	330000U	330000U	3300U
78-59-1	Isophorone	3300U	330000U	330000U	330000U	3300U
88-75-5	2-Nitrophenol	3300U	330000U	330000U	330000U	3300U
105-67-9	2,4-Dimethylphenol	3300U	330000U	330000U	330000U	3300U
65-85-0	Benzoic Acid	16000U	1600000U	1600000U	1600000U	16000U
111-91-1	bis(-2-Chloroethoxy)Methane	3300U	330000U	330000U	330000U	3300U
120-83-2	2,4-Dichlorophenol	3300U	330000U	330000U	330000U	3300U
120-82-1	1,2,4-Trichlorobenzene	3300U	330000U	330000U	330000U	3300U
91-20-3	Naphthalene	3300U	330000U	330000U	330000U	3300U
106-47-8	4-Chloroaniline	3300U	330000U	330000U	330000U	3300U
87-68-3	Hexachlorobutadiene	3300U	330000U	330000U	330000U	3300U
59-50-7	4-Chloro-3-Methylphenol	3300U	330000U	330000U	330000U	3300U
91-57-6	2-Methylnapthalene	3300U	330000U	330000U	330000U	3300U
77-47-4	Hexachlorocyclopentadiene	3300U	330000U	330000U	330000U	3300U
88-06-2	2,4,6-Trichlorophenol	3300U	330000U	330000U	330000U	3300U
95-95-4	2,4,5-Trichlorophenol	16000U	1600000U	1600000U	1600000U	16000U
91-58-7	2-Chloronapthalene	3300U	330000U	330000U	330000U	3300U

TABLE A - 3
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM			11:35AM	10:25AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-3	24559-4	24559-5	24559-11
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1
	FIELD LOCATION.....					
	DEPTH, FT.....					
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
	ORGANICS - SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
88-74-4	2-Nitroaniline	16000U	1600000U	1600000U	1600000U	16000U
131-11-3	Dimethyl Phthalate	3300U	330000U	330000U	330000U	3300U
208-96-8	Acenaphthylene	3300U	330000U	330000U	330000U	3300U
99-09-2	3-Nitroaniline	16000U	1600000U	1600000U	1600000U	16000U
83-32-9	Acenaphthene	3300U	330000U	330000U	330000U	3300U
51-28-5	2,4-Dinitophenol	16000U	1600000U	1600000U	1600000U	16000U
100-02-7	4-Nitrophenol	16000U	1600000U	1600000U	1600000U	16000U
132-64-9	Dibenzofuran	3300U	330000U	330000U	330000U	3300U
121-14-2	2,4-Dinitrotoluene	3300U	330000U	330000U	330000U	3300U
606-20-2	2,6-Dinitrotolune	3300U	330000U	330000U	330000U	3300U
84-66-2	Diethylphthalate	3300U	330000U	330000U	330000U	3300U
7005-72-3	4-Chlorophenyl-phenylether	3300U	330000U	330000U	330000U	3300U
86-73-7	Fluorene	3300U	330000U	330000U	330000U	3300U
100-01-6	4-Nitroaniline	16000U	1600000U	1600000U	1600000U	16000U
534-52-1	4,6-Dinitro-2-Methylphenol	16000U	1600000U	1600000U	1600000U	16000U
86-30-6	N-Nitrosodiphenylamine	3300U	330000U	330000U	330000U	3300U
101-55-3	4-Bromophenyl-phenylether	3300U	330000U	330000U	330000U	3300U
118-74-1	Hexachlorobenzene	3300U	330000U	330000U	240000	4900
87-86-5	Pentachlorophenol	16000U	1600000U	1600000U	1600000U	16000U
85-01-8	Phenanthracene	3300U	330000U	330000U	330000U	3300U
120-12-7	Anthracene	3300U	330000U	330000U	330000U	3300U
84-74-2	Di-n-Butylphthalate	3300U	330000U	330000U	330000U	3300U
206-44-0	Fluoranthene	3300U	330000U	330000U	330000U	3300U
129-00-0	Pyrene	3300U	330000U	330000U	330000U	1400J
85-68-7	Butylbenzylphthalate	3300U	330000U	330000U	330000U	11000
91-94-1	3,3'-Dichlorobenzidine	6600U	660000U	660000U	660000U	6600U
56-55-3	Benzo(a)Anthracene	3300U	330000U	330000U	330000U	3300U
117-81-7	bis(2-Ethylhexyl)Phthalate	3300U	330000U	330000U	330000U	1900J
218-01-9	Chrysene	3300U	330000U	330000U	330000U	3300U

TABLE A - 3
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM			11:35AM	10:25AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-3	24559-4	24559-5	24559-11
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1
	FIELD LOCATION.....					
	DEPTH, FT.....					
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
	ORGANICS - SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
117-84-0	Di-n-Octyl Phthalate	3300U	330000U	330000U	330000U	3300U
205-99-2	Benzo(b)Fluoranthene	3300U	330000U	330000U	330000U	3300U
207-08-9	Benzo(k)Fluoranthene	3300U	330000U	330000U	330000U	3300U
50-32-8	Benzo(a)Pyrene	3300U	330000U	330000U	330000U	3300U
193-39-5	Indeno(1,2,3-cd)Pyrene	3300U	330000U	330000U	330000U	3300U
53-70-3	Dibenz(a,h)Anthracene	3300U	330000U	330000U	330000U	3300U
191-24-2	Benzo(g,h,i)Perylene	3300U	330000U	330000U	330000U	3300U

Notes:

U Compound was not detected.
ug/kg Microgram per kilogram.
ug/L Microgram per liter.
Compound detected above detection limits.

TABLE A - 3
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM	10:30AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24560-1	24560-2	24560-3
	FIELD SAMPLE ID NO.....	SFC WTR #1	TRIP BLANK	FIELD BLANK
	FIELD LOCATION.....			
	DEPTH, FT.....			
	PARCEL LOCATION.....			
CAS NUMBER	MATRIX.....	SFC WATER	WATER	WATER
	ORGANICS - SEMI VOLATILES	ug/L	ug/L	ug/L
108-95-2	Phenol	10U	10U	10U
111-44-4	bis(-2-Chloroethyl)Ether	10U	10U	10U
95-57-8	2-Chlorophenol	10U	10U	10U
541-73-1	1,3-Dichlorobenzene	10U	10U	10U
106-46-7	1,4-Dichlorobenzene	10U	10U	10U
100-51-6	Benzyl Alcohol	10U	10U	10U
95-50-1	1,2-Dichlorobenzene	10U	10U	10U
95-48-7	2-Methylphenol	10U	10U	10U
39638-32-9	bis(2-chloroisopropyl)Ether	10U	10U	10U
106-44-5	4-Methylphenol	10U	10U	10U
621-64-7	N-Nitroso-Di-n-Propylamine	10U	10U	10U
67-72-1	Hexachloroethane	10U	10U	10U
98-95-3	Nitrobenzene	10U	10U	10U
78-59-1	Isophorone	10U	10U	10U
88-75-5	2-Nitrophenol	10U	10U	10U
105-67-9	2,4-Dimethylphenol	10U	10U	10U
65-85-0	Benzoic Acid	50U	50U	50U
111-91-1	bis(-2-Chloroethoxy)Methane	10U	10U	10U
120-83-2	2,4-Dichlorophenol	10U	10U	10U
120-82-1	1,2,4-Trichlorobenzene	10U	10U	10U
91-20-3	Naphthalene	10U	10U	10U
106-47-8	4-Chloroaniline	10U	10U	10U
87-68-3	Hexachlorobutadiene	10U	10U	10U
59-50-7	4-Chloro-3-Methylphenol	10U	10U	10U
91-57-6	2-Methylnapthalene	10U	10U	10U
77-47-4	Hexachlorocyclopentadiene	10U	10U	10U
88-06-2	2,4,6-Trichlorophenol	10U	10U	10U
95-95-4	2,4,5-Trichlorophenol	50U	50U	50U
91-58-7	2-Chloronapthalene	10U	10U	10U

TABLE A - 3
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM	10:30AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24560-1	24560-2	24560-3
	FIELD SAMPLE ID NO.....	SFC WTR #1	TRIP BLANK	FIELD BLANK
	FIELD LOCATION.....			
	DEPTH, FT.....			
	PARCEL LOCATION.....			
CAS NUMBER	MATRIX.....	SFC WATER	WATER	WATER
	ORGANICS - SEMI VOLATILES	ug/L	ug/L	ug/L
88-74-4	2-Nitroaniline	50U	50U	50U
131-11-3	Dimethyl Phthalate	10U	10U	10U
208-96-8	Acenaphthylene	10U	10U	10U
99-09-2	3-Nitroaniline	50U	50U	50U
83-32-9	Acenaphthene	10U	10U	10U
51-28-5	2,4-Dinitophenol	50U	50U	50U
100-02-7	4-Nitrophenol	50U	50U	50U
132-64-9	Dibenzofuran	10U	10U	10U
121-14-2	2,4-Dinitrotoluene	10U	10U	10U
606-20-2	2,6-Dinitrotolune	10U	10U	10U
84-66-2	Diethylphthalate	10U	10U	10U
7005-72-3	4-Chlorophenyl-phenylether	10U	10U	10U
86-73-7	Fluorene	10U	10U	10U
100-01-6	4-Nitroaniline	50U	50U	50U
534-52-1	4,6-Dinitro-2-Methylphenol	50U	50U	50U
86-30-6	N-Nitrosodiphenylamine	10U	10U	10U
101-55-3	4-Bromophenyl-phenylether	10U	10U	10U
118-74-1	Hexachlorobenzene	10U	10U	10U
87-86-5	Pentachlorophenol	50U	50U	50U
85-01-8	Phenanthracene	10U	10U	10U
120-12-7	Anthracene	10U	10U	10U
84-74-2	Di-n-Butylphthalate	10U	10U	10U
206-44-0	Fluoranthene	10U	10U	10U
129-00-0	Pyrene	10U	10U	10U
85-68-7	Butylbenzylphthalate	10U	10U	10U
91-94-1	3,3'-Dichlorobenzidine	20U	20U	20U
56-55-3	Benzo(a)Anthracene	10U	10U	10U
117-81-7	bis(2-Ethylhexyl)Phthalate	4JB	10U	10U
218-01-9	Chrysene	10U	10U	10U

TABLE A - 3
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM	10:30AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24560-1	24560-2	24560-3
	FIELD SAMPLE ID NO.....	SFC WTR #1	TRIP BLANK	FIELD BLANK
	FIELD LOCATION.....			
	DEPTH, FT.....			
	PARCEL LOCATION.....			
CAS NUMBER	MATRIX.....	SFC WATER	WATER	WATER
	ORGANICS - SEMI VOLATILES	ug/L	ug/L	ug/L
117-84-0	Di-n-Octyl Phthalate	10U	10U	10U
205-99-2	Benzo(b)Fluoranthene	10U	10U	10U
207-08-9	Benzo(k)Fluoranthene	10U	10U	10U
50-32-8	Benzo(a)Pyrene	10U	10U	10U
193-39-5	Indeno(1,2,3-cd)Pyrene	10U	10U	10U
53-70-3	Dibenz(a,h)Anthracene	10U	10U	10U
191-24-2	Benzo(g,h,I)Perylene	10U	10U	10U

Notes:

U Compound was not detected.
ug/kg Microgram per kilogram.
ug/L Microgram per liter.
[#] *Compound detected above detection lim*

300359

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM			11:35AM	10:25AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-3	24559-4	24559-5	24559-11	24560-1
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1	SFC WTR #1
	FIELD LOCATION.....						
	DEPTH, FT.....						
	PARCEL LOCATION.....						
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT	SFC WATER
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L
319-84-6	Alpha-BHC	8000U	80000U	80000U	800000U	3100CJ	3.2
319-85-7	Beta-BHC	8000U	80000U	80000U	800000U	80000U	0.5U
319-896-8	Delta-BHC	8000U	80000U	80000U	800000U	2600CJ	0.62
58-89-9	Gamma-BHC	8000U	80000U	80000U	800000U	5500CJ	.041J
76-44-8	Heptachlor	8000U	80000U	80000U	800000U	80000U	0.5U
309-00-2	Aldrin	8000U	80000U	80000U	800000U	3100J	0.5U
1024-67-3	Heptachlor Epoxide	8000U	80000U	80000U	800000U	80000U	0.05U
959-98-8	Endosulfan I	8000U	80000U	80000U	800000U	80000U	0.05U
60-57-1	Dieldrin	2000J	160000U	91000J	1600000U	8800J	0.64
72-55-9	4,4'-DDE	4500CJ	96000J	160000U	1400000CJ	9200CJ	0.10U
72-20-8	Endrin	16000U	160000U	160000U	1600000U	16000U	0.10U
33213-65-9	Endosulfan II	16000U	160000U	160000U	1600000U	16000U	0.10U
72-54-8	4,4'-DDD	3700CJ	170000C	27000CJ	300000CJ	20000C	1.4
1031-07-8	Endosulfan Sulfate	16000U	160000U	160000U	1600000U	16000U	0.10U
50-29-3	4,4'-DDT	72000C	930000C	580000C	2300000C	200000C	2
72-43-5	Methoxychlor	80000U	800000U	800000U	8000000U	80000U	0.50U
53494-70-5	Endrin Ketone	16000U	160000U	160000U	1600000U	16000U	0.10U
57-74-9	Chlordane	80000U	800000U	800000U	800000U	80000U	0.50U
8001-35-2	Toxaphene	160000U	1600000U	160000U	16000000U	160000U	1.0U
	Botran						
	Quintozene						
	Hexachlorophene						
	Carbaryl						
	Malathion						
	2,4,5-TP						
	2,4-D						
	Diphenamid						

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86	4/22/86
	TIME.....	10:30AM			11:35AM	10:25AM	10:30AM
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI	NJDEP SI
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL
	LAB SAMPLE ID NO.....	24559-1	24559-3	24559-4	24559-5	24559-11	24560-1
	FIELD SAMPLE ID NO.....	SOIL #1	SOIL #3	SOIL #4	SOIL #5	SEDIMENT #1	SFC WTR #1
	FIELD LOCATION.....						
	DEPTH, FT.....						
	PARCEL LOCATION.....						
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT	SFC WATER
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L
12674-11-2	Aroclor-1016	80000U	800000U	800000U	8000000U	80000U	5.0U
11104-28-2	Aroclor-1221	80000U	800000U	800000U	8000000U	80000U	5.0U
11141-16-5	Aroclor-1232	80000U	800000U	800000U	8000000U	80000U	0.50U
53469-21-9	Aroclor-1242	80000U	800000U	800000U	8000000U	80000U	0.50U
12672-29-6	Aroclor-1248	80000U	800000U	800000U	8000000U	80000U	0.50U
11097-69-1	Aroclor-1254	160000U	1600000U	1600000U	16000000U	160000U	1.0U
11096-82-5	Aroclor-1260	160000U	1600000U	1600000U	16000000U	160000U	1.0U

Notes:

- U Compound was not detected.
- J *Estimated value.*
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- *mg/cu. m Milligram per cubic meter*
- ppb Parts per billion.
- [#] Compound detected above detection limits.

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	4/22/86	4/22/86	12/1/87	12/1/87	12/1/87
	TIME	10:30AM	10:30AM			
	SAMPLE EVENT	NJDEP SI	NJDEP SI	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL			
	LAB SAMPLE ID NO.	24560-2	24560-3	7600-A	7600-B	7600-C
	FIELD SAMPLE ID NO.	TRIP BLANK	FIELD BLANK			
	FIELD LOCATION			1	1	1
	DEPTH, FT			SURFACE	1	3
	PARCEL LOCATION			A	A	A
CAS NUMBER	MATRIX	WATER	WATER	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/L	ug/L	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	0.05U	0.05U	5000U	50U	50U
319-85-7	Beta-BHC	0.05U	0.05U	5000U	50U	50U
319-896-8	Delta-BHC	0.05U	0.05U	31,000	800	50U
58-89-9	Gamma-BHC	0.05U	0.05U	5000U	50U	50U
76-44-8	Heptachlor	0.05U	0.05U			
309-00-2	Aldrin	0.05U	0.05U			
1024-67-3	Heptachlor Epoxide	0.05U	0.05U			
959-98-8	Endosulfan I	0.05U	0.05U			
60-57-1	Dieldrin	0.10U	0.10U			
72-55-9	4,4'-DDE	0.10U	0.10U	5000U	50U	50U
72-20-8	Endrin	0.10U	0.10U			
33213-65-9	Endosulfan II	0.10U	0.10U			
72-54-8	4,4'-DDD	0.10U	0.10U	320000	1300	710
1031-07-8	Endosulfan Sulfate	0.10U	0.10U			
50-29-3	4,4'-DDT	0.10U	0.10U	1400000	2700	3300
72-43-5	Methoxychlor	0.50U	0.50U	5000U	50U	50U
53494-70-5	Endrin Ketone	0.10U	0.10U			
57-74-9	Chlordane	0.50U	0.50U			
8001-35-2	Toxaphene	1.0U	1.0U			
	Botran			5000U	50U	50U
	Quintozene			5000U	50U	50U
	Hexachlorophene			100000U	1000U	1000U
	Carbaryl			3000U	3800	4100
	Malathion			38000	16000	8800
	2,4,5-TP			ND	ND	ND
	2,4-D			ND	ND	ND
	Diphenamid			ND	600	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	4/22/86	4/22/86	12/1/87	12/1/87	12/1/87
	TIME.....	10:30AM	10:30AM			
	SAMPLE EVENT.....	NJDEP SI	NJDEP SI	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....	CALIFORNIA ANALYTICAL	CALIFORNIA ANALYTICAL			
	LAB SAMPLE ID NO.....	24560-2	24560-3	7600-A	7600-B	7600-C
	FIELD SAMPLE ID NO.....	TRIP BLANK	FIELD BLANK			
	FIELD LOCATION.....			1	1	1
	DEPTH, FT.....			SURFACE	1	3
	PARCEL LOCATION.....			A	A	A
CAS NUMBER	MATRIX.....	WATER	WATER	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/L	ug/L	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	0.50U	0.50U			
11104-28-2	Aroclor-1221	0.50U	0.50U			
11141-16-5	Aroclor-1232	0.50U	0.50U			
53469-21-9	Aroclor-1242	0.50U	0.50U			
12672-29-6	Aroclor-1248	0.50U	0.50U			
11097-69-1	Aroclor-1254	1.0U	1.0U			
11096-82-5	Aroclor-1260	1.0U	1.0U			

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

300363

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	7600-D	7599-A	7599-B	7599-C	7599-D	7598-A
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	1	2	2	2	2	3
	DEPTH, FT.....	6	SURFACE	1	3	5	SURFACE
	PARCEL LOCATION.....	A	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	5U	5000U	5000U	5U	5U	500U
319-85-7	Beta-BHC	5U	32,000	42,000	5U	5U	500U
319-896-8	Delta-BHC	5U	6,400	5000U	5U	5U	500U
58-89-9	Gamma-BHC	5U	8,100	11,000	5U	5U	500U
76-44-8	Heptachlor						
309-00-2	Aldrin						
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin						
72-55-9	4,4'-DDE	5U	5000U	5000U	40	5U	2900
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD	70	290000	5000U	140	80	14000
1031-07-8	Endosulfan Sulfate						
50-29-3	4,4'-DDT	270	3800000	1000000	480	220	160000
72-43-5	Methoxychlor	5U	5000U	5000U	90	20	500U
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran	5U	630000	5000U	5U	5U	4600
	Quintozene	5U	5000U	5000U	5U	5U	500U
	Hexachlorophene	100U	100000U	100000U	100U	100U	10000U
	Carbaryl	3000U	3000U	4700	5100	3000U	3400
	Malathion	2000U	2000U	530000	28000	9300	2000U
	2,4,5-TP	ND	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND	ND
	Diphenamid	ND	ND	ND	ND	ND	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	7600-D	7599-A	7599-B	7599-C	7599-D	7598-A
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	1	2	2	2	2	3
	DEPTH, FT.....	6	SURFACE	1	3	5	SURFACE
	PARCEL LOCATION.....	A	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242	THESE SAMPLES NOT ANALYZED FOR PCB's					
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260						

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

300365

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....					
	LAB SAMPLE ID NO.....	7598-B	7598-C	7597-A	7597-B	7597-C
	FIELD SAMPLE ID NO.....					
	FIELD LOCATION.....	3	3	4	4	4
	DEPTH, FT.....	1	3	SURFACE	1	3
	PARCEL LOCATION.....	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	5000U	500U	50000U	500U	50U
319-85-7	Beta-BHC	5000U	500U	50000U	500U	50U
319-896-8	Delta-BHC	5000U	1800	50000U	500U	50U
58-89-9	Gamma-BHC	5000U	500U	50000U	500U	50U
76-44-8	Heptachlor					
309-00-2	Aldrin					
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin					
72-55-9	4,4'-DDE	14000	50000	50000U	500U	50U
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD	120000	340000	50000U	1900	50U
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT	190000	490000	630000	25000	230
72-43-5	Methoxychlor	5000U	500U	50000U	500U	50U
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	36000	44000	50000U	8600	50U
	Quintozene	5000U	500U	50000U	500U	50U
	Hexachlorophene	100000U	10000U	1000000U	10000U	1000U
	Carbaryl	3000U	3000U	3000U	3000U	3000U
	Malathion	3900	5600	2000U	2000U	5200
	2,4,5-TP	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND
	Diphenamid	ND	ND	ND	ND	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....					
	LAB SAMPLE ID NO.....	7598-B	7598-C	7597-A	7597-B	7597-C
	FIELD SAMPLE ID NO.....					
	FIELD LOCATION.....	3	3	4	4	4
	DEPTH, FT.....	1	3	SURFACE	1	3
	PARCEL LOCATION.....	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242		THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- **U** Compound was not detected.
- **J** Estimated value.
- **B** Analyte also detected in blank.
- **N** Not detected.
- **C** Pesticide result confirmed by GC/MS.
- **ug/kg** *Microgram per kilogram.*
- **ug/L** Microgram per liter.
- **mg/kg** Milligram per kilogram.
- **mg/cu. m** Milligram per cubic meter
- **ppb** Parts per billion.
- **[#]** Compound detected above detection lim

30/3671

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	7597-D	5897-A	5897-B	5897-C	5897-D	5898-A
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	4	5	5	5	5	5
	DEPTH, FT.....	5	SURFACE	1	3	5	SURFACE
	PARCEL LOCATION.....	A	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	5U	12000	10000	50000U	8700	26000
319-85-7	Beta-BHC	5U	4300	5400	50000U	1900	5000U
319-896-8	Delta-BHC	5U	3300	6100	50000U	870	5000U
58-89-9	Gamma-BHC	5U	870	800	50000U	420	5000U
76-44-8	Heptachlor						
309-00-2	Aldrin						
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin						
72-55-9	4,4'-DDE	5U	140000	50U	50000U	50U	92000
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD	5U	170000	7400	50000U	16000	200000
1031-07-8	Endosulfan Sulfate						
50-29-3	4,4'-DDT	5U	300000	12000	480000	50000	380000
72-43-5	Methoxychlor	5U	500U	50U	50000U	50U	5000U
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran	53	5400	1300	50000U	1300	5000U
	Quintozene	5U	500U	50U	50000U	50U	5000U
	Hexachlorophene	100U	10000U	1000U	1000000U	1000U	100000U
	Carbaryl	3000U	3000U	3000U	4600	3000U	3000U
	Malathion	2000U	25000	4700	9900	4400	11000
	2,4,5-TP	ND	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND	ND
	Diphenamid	ND	ND	ND	ND	ND	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	7597-D	5897-A	5897-B	5897-C	5897-D	5898-A
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	4	5	5	5	5	5
	DEPTH, FT.....	5	SURFACE	1	3	5	SURFACE
	PARCEL LOCATION.....	A	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242	THESE SAMPLES NOT ANALYZED FOR PCB's					
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260						

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N *Not detected.*
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] *Compound detected above detection lim*

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....					
	LAB SAMPLE ID NO.....	5898-B	5898-C	5898-D	5896-A	5896-B
	FIELD SAMPLE ID NO.....					
	FIELD LOCATION.....	5	5	5	6	6
	DEPTH, FT.....	1	3	5	SURFACE	1
	PARCEL LOCATION.....	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	14000	90000	8100	5000U	500U
319-85-7	Beta-BHC	8700	14000	800	5000U	1400
319-896-8	Delta-BHC	7800	17000	500U	5000U	1200
58-89-9	Gamma-BHC	1000	6800	500U	5000U	590
76-44-8	Heptachlor					
309-00-2	Aldrin					
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin					
72-55-9	4,4'-DDE	500U	6400	1500	5000U	37000
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD	29000	160000	660	30000	140000
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT	59000	340000	39000	190000	680000
72-43-5	Methoxychlor	500U	500U	500U	5000U	500U
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	2300	9900	500U	5000U	500U
	Quintozene	500U	500U	500U	5000U	500U
	Hexachlorophene	10000U	10000U	10000U	1000000U	10000U
	Carbaryl	3800	3600	3000U	3000U	350000
	Malathion	6600	3200	3600	4000	2000U
	2,4,5-TP	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND
	Diphenamid	ND	ND	ND	ND	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....					
	LAB SAMPLE ID NO.....	5898-B	5898-C	5898-D	5896-A	5896-B
	FIELD SAMPLE ID NO.....					
	FIELD LOCATION.....	5	5	5	6	6
	DEPTH, FT.....	1	3	5	SURFACE	1
	PARCEL LOCATION.....	A	A	A	A	A
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242	THESE SAMPLES NOT ANALYZED FOR PCB's				
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

300371

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	5896-C	5896-D	5887-A	5887-B	5887-C	5887-D
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	6	6	7	7	7	7
	DEPTH, FT.....	3	5	SURFACE	1	3	5
	PARCEL LOCATION.....	A	A				
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	500U	80	50U	5U	5U	5U
319-85-7	Beta-BHC	500U	80	50U	5U	5U	5U
319-896-8	Delta-BHC	500U	40	50U	5U	5U	10
58-89-9	Gamma-BHC	500U	30	50U	5U	5U	10
76-44-8	Heptachlor						
309-00-2	Aldrin						
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin						
72-55-9	4,4'-DDE	500U	30	490	5U	5U	5U
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD	4600	130	50U	5U	5U	5U
1031-07-8	Endosulfan Sulfate						
50-29-3	4,4'-DDT	8700	630	1910	5U	5U	5U
72-43-5	Methoxychlor	500U	5U	50U	5U	5U	5U
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran	500U	5U	50U	20	5U	85
	Quintozene	500U	5U	50U	5U	5U	5U
	Hexachlorophene	10000U	100U	1000U	100U	100U	100U
	Carbaryl	59000	14100	3000U	3000U	3000U	3000U
	Malathion	4000	4700	25000	10000	6000	12000
	2,4,5-TP	ND	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND	ND
	Diphenamid	ND	ND	ND	ND	ND	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	5896-C	5896-D	5887-A	5887-B	5887-C	5887-D
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	6	6	7	7	7	7
	DEPTH, FT.....	3	5	SURFACE	1	3	5
	PARCEL LOCATION.....	A	A				
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242	THESE SAMPLES NOT ANALYZED FOR PCB's					
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260						

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....					
	LAB SAMPLE ID NO.....	5895-A	5895-B	5895-C	5895-D	5894-A
	FIELD SAMPLE ID NO.....					
	FIELD LOCATION.....	8	8	8	8	9
	DEPTH, FT.....	SURFACE	1	3	4	SURFACE
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	50U	500U	50U	50U	500U
319-85-7	Beta-BHC	50U	500U	50U	50U	500U
319-896-8	Delta-BHC	50U	500U	50U	50U	500U
58-89-9	Gamma-BHC	50U	500U	50U	50U	500U
76-44-8	Heptachlor					
309-00-2	Aldrin					
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin					
72-55-9	4,4'-DDE	840	500U	50U	50U	500U
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD	740	1800	50U	50U	500U
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT	21000	25000	620	360	5900
72-43-5	Methoxychlor	50U	500U	50U	50U	50U
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	50U	500U	50U	50U	500U
	Quintozene	50U	500U	50U	50U	500U
	Hexachlorophene	1000U	10000U	1000U	1000U	10000U
	Carbaryl	3000U	4,400	3000U	3000U	3000U
	Malathion	3700	16000	3900	6300	16000
	2,4,5-TP	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND
	Diphenamid	ND	ND	ND	ND	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....					
	LAB SAMPLE ID NO.....	5895-A	5895-B	5895-C	5895-D	5894-A
	FIELD SAMPLE ID NO.....					
	FIELD LOCATION.....	8	8	8	8	9
	DEPTH, FT.....	SURFACE	1	3	4	SURFACE
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242		THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

300375

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	5894-B	5893-A	5893-B	5893-C	5893-D	5892-A
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	9	10	10	10	10	11
	DEPTH, FT.....	1	SURFACE	1	3	5	SURFACE
	PARCEL LOCATION.....						
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	5U	5000U	500U	3700	540	500U
319-85-7	Beta-BHC	5U	5000U	500U	1600	50U	500U
319-896-8	Delta-BHC	5U	5000U	500U	50U	50U	500U
58-89-9	Gamma-BHC	5U	5000U	500U	290	50U	500U
76-44-8	Heptachlor						
309-00-2	Aldrin						
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin						
72-55-9	4,4'-DDE	5U	5000U	500U	50U	50U	500U
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD	10	5000U	500U	970	50U	500U
1031-07-8	Endosulfan Sulfate						
50-29-3	4,4'-DDT	70	120000	28000	6700	2500	3300
72-43-5	Methoxychlor	5U	5000U	500U	50U	50U	500U
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran	5U	5000U	500U	3500	1200	500U
	Quintozene	5U	5000U	500U	50U	50U	500U
	Hexachlorophene	100U	100000U	10000U	1000U	1000U	10000U
	Carbaryl	3000U	3000U	4000	23000	3000U	3000U
	Malathion	4000	2000U	13000	5800	22000	14000
	2,4,5-TP	ND	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND	ND
	Diphenamid	ND	400	ND	1600	2000	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....						
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....						
	LAB SAMPLE ID NO.....	5894-B	5893-A	5893-B	5893-C	5893-D	5892-A
	FIELD SAMPLE ID NO.....						
	FIELD LOCATION.....	9	10	10	10	10	11
	DEPTH, FT.....	1	SURFACE	1	3	5	SURFACE
	PARCEL LOCATION.....						
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242			THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260						

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

300377

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME					
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY					
	LAB SAMPLE ID NO.	5892-B	5891-A	5891-B	5890-A	5889-A
	FIELD SAMPLE ID NO.					
	FIELD LOCATION	11	12	12	13	14
	DEPTH, FT	1	SURFACE	1	SURFACE	SURFACE
	PARCEL LOCATION					
CAS NUMBER	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	1400	500U	290	5000U	50U
319-85-7	Beta-BHC	50U	500U	5U	5000U	50U
319-896-8	Delta-BHC	50U	500U	5U	5000U	50U
58-89-9	Gamma-BHC	50U	500U	5U	5000U	50U
76-44-8	Heptachlor					
309-00-2	Aldrin					
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin					
72-55-9	4,4'-DDE	50U	500U	70	5000U	50U
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD	50U	4300	380	94000	5300
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT	50U	9300	560	76000	50U
72-43-5	Methoxychlor	50U	500U	5U	5000U	50U
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	50U	500U	5U	5000U	50U
	Quintozene	50U	500U	5U	5000U	50U
	Hexachlorophene	1000U	10000U	100U	100000U	1000U
	Carbaryl	3000U	4500	3000U	3000U	3000U
	Malathion	15000	5300	5900	2000U	2000U
	2,4,5-TP	ND	ND	ND	ND	ND
	2,4-D	ND	ND	ND	ND	ND
	Diphenamid	900	1000	1400	ND	ND

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/1/87	12/1/87	12/1/87	12/1/87	12/1/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....					
	LAB SAMPLE ID NO.....	5892-B	5891-A	5891-B	5890-A	5889-A
	FIELD SAMPLE ID NO.....					
	FIELD LOCATION.....	11	12	12	13	14
	DEPTH, FT.....	1	SURFACE	1	SURFACE	SURFACE
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
	ORGANICS - Pesticides/Herbicides/PCB	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242	THESE SAMPLES NOT ANALYZED FOR PCB's				
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

3003379

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....						
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	S-CUBED	S-CUBED	S-CUBED	S-CUBED	E&E	E&E
	LAB SAMPLE ID NO.....	091393	091392	091391	091394	091408	091387
	FIELD SAMPLE ID NO.....	2	3	4	5	6	7
	FIELD LOCATION.....	T1,T2,T3	OIL SUMP	UST "B"	T7	FIELD BLANK	CORNFIELD RUNOFF
	DEPTH, FT.....						
	PARCEL LOCATION.....	A	A	A	A		B
CAS NUMBER	MATRIX.....	OIL	OIL	OIL	OIL	WATER	WATER
	ORGANICS - Pesticides/Herbicides/PCB	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
319-84-6	Alpha-BHC					ND	0.13J
319-85-7	Beta-BHC					ND	0.23J
319-896-8	Delta-BHC					ND	0.07J
58-89-9	Gamma-BHC					ND	0.10J
76-44-8	Heptachlor						
309-00-2	Aldrin					ND	ND
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin					ND	ND
72-55-9	4,4'-DDE					ND	0.37J
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD					ND	0.49J
1031-07-8	Endosulfan Sulfate						
50-29-3	4,4'-DDT					ND	3.1
72-43-5	Methoxychlor					ND	ND
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran					ND	ND
	Quintozene					ND	ND
	Hexachlorophene						
	Carbaryl						
	Malathion					ND	ND
	2,4,5-TP						
	2,4-D						
	Diphenamid						

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....						
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	S-CUBED	S-CUBED	S-CUBED	S-CUBED	E&E	E&E
	LAB SAMPLE ID NO.....	091393	091392	091391	091394	091408	091387
	FIELD SAMPLE ID NO.....	2	3	4	5	6	7
	FIELD LOCATION.....	T1,T2,T3	OIL SUMP	UST "B"	T7	FIELD BLANK	CORNFIELD RUNOFF
	DEPTH, FT.....						
	PARCEL LOCATION.....	A	A	A	A		B
CAS NUMBER	MATRIX.....	OIL	OIL	OIL	OIL	WATER	WATER
	ORGANICS - Pesticides/Herbicides/PCB	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242						
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260	9400	ND	ND	880J		

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

300381

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....					
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	E&E	E&E	E&E	E&E	E&E
	LAB SAMPLE ID NO.....	091411	091395	091396	091397	091398
	FIELD SAMPLE ID NO.....	8	9	10	11	12
	FIELD LOCATION.....	CREEK ON-SITE	DRAINAGE DITCH	BEHIND PINE TREES	BACK OF CORNFIELD	BEHIND CORNFIELD
	DEPTH, FT.....					
	PARCEL LOCATION.....	C	A	A	B	B
CAS NUMBER	MATRIX.....	WATER	WATER			WATER
	ORGANICS - Pesticides/Herbicides/PCB	ug/L	ug/L	mg/kg	mg/kg	ug/L
319-84-6	Alpha-BHC	28	ND	ND	ND	ND
319-85-7	Beta-BHC	6.0J	ND	ND	ND	ND
319-896-8	Delta-BHC	10.0J	ND	ND	ND	ND
58-89-9	Gamma-BHC	21	ND	ND	ND	ND
76-44-8	Heptachlor					
309-00-2	Aldrin	ND	ND	ND	ND	ND
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin	ND	ND	ND	ND	ND
72-55-9	4,4'-DDE	ND	ND	4200J	2300J	1200J
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD	ND	ND	870J	1700J	1500J
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT	ND	ND	22000	35000	6900
72-43-5	Methoxychlor	ND	ND	ND	ND	ND
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	ND	ND	ND	ND	ND
	Quintozene	ND	ND	ND	ND	ND
	Hexachlorophene					
	Carbaryl					
	Malathion	ND	ND	ND	ND	ND
	2,4,5-TP					
	2,4-D					
	Diphenamid					

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....					
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	E&E	E&E	E&E	E&E	E&E
	LAB SAMPLE ID NO.....	091411	091395	091396	091397	091398
	FIELD SAMPLE ID NO.....	8	9	10	11	12
	FIELD LOCATION.....	CREEK ON-SITE	DRAINAGE DITCH	BEHIND PINE TREES	BACK OF CORNFIELD	BEHIND CORNFIELD
	DEPTH, FT.....					
	PARCEL LOCATION.....	C	A	A	B	B
CAS NUMBER	MATRIX.....	WATER	WATER			WATER
	ORGANICS - Pesticides/Herbicides/PCB	ug/L	ug/L	mg/kg	mg/kg	ug/L
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242		THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....						
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	E&E	E&E	E&E	E&E	E&E	E&E
	LAB SAMPLE ID NO.....	091399	091403	091409	091410	091400	091401
	FIELD SAMPLE ID NO.....	13	14	15	16	17	18
	FIELD LOCATION.....	PARKING LOT	LOCAL PARK SOIL BLANK	STRESSED VEG. AREA	CREEK SEDIMENT	SW CORNER LANDFILL	NE SIDE LANDFILL
	DEPTH, FT.....						
	PARCEL LOCATION.....	A		C	C	A	A
CAS NUMBER	MATRIX.....		SOIL		SEDIMENT		
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
319-84-6	Alpha-BHC	ND	ND	ND	1050J	16000J	70000J
319-85-7	Beta-BHC	ND	ND	ND	ND	ND	ND
319-896-8	Delta-BHC	ND	ND	ND	ND	ND	ND
58-89-9	Gamma-BHC	ND	ND	ND	ND	7600J	71000J
76-44-8	Heptachlor						
309-00-2	Aldrin	ND	ND	ND	ND	ND	ND
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin	ND	ND	ND	2400J	63000J	770000
72-55-9	4,4'-DDE	1400	ND	15000J	4500J	46000J	ND
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD	770	ND	4600J	27000	130000J	230000
1031-07-8	Endosulfan Sulfate			ND	ND	350000	ND
50-29-3	4,4'-DDT	2300	ND	110000	10300	1900000	2200000
72-43-5	Methoxychlor	ND	ND	ND	ND	ND	ND
53494-70-5	Endrin Ketone			ND	ND	350000	ND
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran	ND	ND	ND	ND	ND	ND
	Quintozene	ND	ND	ND	ND	ND	ND
	Hexachlorophene						
	Carbaryl						
	Malathion	ND	ND	ND	ND	ND	ND
	2,4,5-TP						
	2,4-D						
	Diphenamid						

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....						
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	E&E	E&E	E&E	E&E	E&E	E&E
	LAB SAMPLE ID NO.....	091399	091403	091409	091410	091400	091401
	FIELD SAMPLE ID NO.....	13	14	15	16	17	18
	FIELD LOCATION.....	PARKING LOT	LOCAL PARK SOIL BLANK	STRESSED VEG. AREA	CREEK SEDIMENT	SW CORNER LANDFILL	NE SIDE LANDFILL
	DEPTH, FT.....						
	PARCEL LOCATION.....	A		C	C	A	A
CAS NUMBER	MATRIX.....		SOIL		SEDIMENT		
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242			THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260						

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

3001385

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....					
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	E&E	E&E	E&E	E&E	E&E
	LAB SAMPLE ID NO.....	091403	091404	091405	091406	091407
	FIELD SAMPLE ID NO.....	19	20	21	22	23
	FIELD LOCATION.....	BEHIND BLDG 29	WEST OF BLDG 29	LANDFILL DRUM AREA	SW CORNER LANDFILL	LANDFILL BARREN AREA
	DEPTH, FT.....					
	PARCEL LOCATION.....	A	A	A	A	A
CAS NUMBER	MATRIX.....					
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
319-84-6	Alpha-BHC	ND	ND	ND	3800J	ND
319-85-7	Beta-BHC	ND	ND	ND	ND	ND
319-896-8	Delta-BHC	ND	ND	ND	ND	ND
58-89-9	Gamma-BHC	ND	ND	ND	2700J	ND
76-44-8	Heptachlor					
309-00-2	Aldrin	13000J	ND	ND	ND	ND
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin	96000J	45000	6900J	13000J	ND
72-55-9	4,4'-DDE	120000J	ND	3900J	10200J	ND
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD	210000J	39000	16000J	42000J	ND
1031-07-8	Endosulfan Sulfate	ND	ND	ND	ND	ND
50-29-3	4,4'-DDT	1100000J	220000	210000	380000	2400000
72-43-5	Methoxychlor	ND	10200J	ND	ND	ND
53494-70-5	Endrin Ketone	ND	ND	ND	ND	ND
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	ND	ND	ND	ND	ND
	Quintozene	ND	ND	ND	ND	ND
	Hexachlorophene					
	Carbaryl					
	Malathion	ND	ND	ND	ND	ND
	2,4,5-TP					
	2,4-D					
	Diphenamid					

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....					
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	E&E	E&E	E&E	E&E	E&E
	LAB SAMPLE ID NO.....	091403	091404	091405	091406	091407
	FIELD SAMPLE ID NO.....	19	20	21	22	23
	FIELD LOCATION.....	BEHIND BLDG 29	WEST OF BLDG 29	LANDFILL DRUM AREA	SW CORNER LANDFILL	LANDFILL BARREN AREA
	DEPTH, FT.....					
	PARCEL LOCATION.....	A	A	A	A	A
CAS NUMBER	MATRIX.....					
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242		THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

3003837

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/19/87	10/19/87	10/19/87	10/19/87	10/19/87	10/19/87
	TIME.....						
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	EPA	EPA	EPA	EPA	EPA	EPA
	LAB SAMPLE ID NO.....	090878	090879	090880	090881	090882	090883
	FIELD SAMPLE ID NO.....	24	25	26	27	28	29
	FIELD LOCATION.....	T1	T2	T3	T4	T5	T6
	DEPTH, FT.....						
	PARCEL LOCATION.....	A	A	A	A	A	A
CAS NUMBER	MATRIX.....						
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
319-84-6	Alpha-BHC						
319-85-7	Beta-BHC						
319-896-8	Delta-BHC						
58-89-9	Gamma-BHC						
76-44-8	Heptachlor						
309-00-2	Aldrin						
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin						
72-55-9	4,4'-DDE						
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD						
1031-07-8	Endosulfan Sulfate		THESE SAMPLES NOT ANALYZED FOR PESTICIDES/HERBICIDES				
50-29-3	4,4'-DDT						
72-43-5	Methoxychlor						
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran						
	Quintozene						
	Hexachlorophene						
	Carbaryl						
	Malathion						
	2,4,5-TP						
	2,4-D						
	Diphenamid						

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/19/87	10/19/87	10/19/87	10/19/87	10/19/87	10/19/87
	TIME.....						
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	EPA	EPA	EPA	EPA	EPA	EPA
	LAB SAMPLE ID NO.....	090878	090879	090880	090881	090882	090883
	FIELD SAMPLE ID NO.....	24	25	26	27	28	29
	FIELD LOCATION.....	T1	T2	T3	T4	T5	T6
	DEPTH, FT.....						
	PARCEL LOCATION.....	A	A	A	A	A	A
CAS NUMBER	MATRIX.....						
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242						
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260	5250	14000	13200	ND	2000	2000

Notes:

U Compound was not detected.
J Estimated value.
B Analyte also detected in blank.
N Not detected.
C Pesticide result confirmed by GC/MS.
ug/kg Microgram per kilogram.
ug/L Microgram per liter.
mg/kg Milligram per kilogram.
mg/cu. m Milligram per cubic meter
ppb Parts per billion.
[#] Compound detected above detection lim

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/19/87	10/19/87	10/19/87	10/19/87	10/19/87
	TIME.....					
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	EPA	ENVIROTECH	ENVIROTECH	ENVIROTECH	EPA
	LAB SAMPLE ID NO.....	090884	090887	090888	090890	090892
	FIELD SAMPLE ID NO.....	30	33	35	36	37
	FIELD LOCATION.....	T8	PALLET STORAGE	RR LOADING AREA	RR SPUR	UST "A"
	DEPTH, FT.....					
	PARCEL LOCATION.....	A	A	A	A	A
CAS NUMBER	MATRIX.....					
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
319-84-6	Alpha-BHC		ND	ND	ND	
319-85-7	Beta-BHC		ND	ND	ND	
319-896-8	Delta-BHC		ND	ND	ND	
58-89-9	Gamma-BHC		ND	ND	ND	
76-44-8	Heptachlor					
309-00-2	Aldrin		ND	ND	ND	
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin		ND	ND	ND	
72-55-9	4,4'-DDE		ND	1900	2100	
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD		53000	2700	3500	
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT		2300000	31800	36900	
72-43-5	Methoxychlor		ND	5800	2800	
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran		ND	ND	ND	
	Quintozene		ND	ND	ND	
	Hexachlorophene					
	Carbaryl					
	Malathion		ND	57000	ND	
	2,4,5-TP					
	2,4-D					
	Diphenamid					

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	10/19/87	10/19/87	10/19/87	10/19/87	10/19/87
	TIME					
	SAMPLE EVENT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY	EPA	ENVIROTECH	ENVIROTECH	ENVIROTECH	EPA
	LAB SAMPLE ID NO.	090884	090887	090888	090890	090892
	FIELD SAMPLE ID NO.	30	33	35	36	37
	FIELD LOCATION	T8	PALLET STORAGE	RR LOADING AREA	RR SPUR	UST "A"
	DEPTH, FT					
	PARCEL LOCATION	A	A	A	A	A
CAS NUMBER	MATRIX					
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242					
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260	1920				2000

Notes:

U Compound was not detected.
J Estimated value.
B Analyte also detected in blank.
N Not detected.
C Pesticide result confirmed by GC/MS.
ug/kg Microgram per kilogram.
ug/L Microgram per liter.
mg/kg Milligram per kilogram.
mg/cu. m Milligram per cubic meter
ppb Parts per billion.
[#] Compound detected above detection lim

30013911

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/19/87	10/19/87	10/19/87	10/27/87	10/27/87	10/27/87
	TIME.....						
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY.....	EPA	ENVIROTECH	ENVIROTECH	EPA	EPA	ENVIR. PROFILE
	LAB SAMPLE ID NO.....	090893	090891	090894	091076	091077	091083
	FIELD SAMPLE ID NO.....	38	39	40	41	42	49
	FIELD LOCATION.....	UST "C"	LAB AREA	DUST TOWER BLDG 5	COMPRESSOR 1	COMPRESSOR 2	OFF. BLDG PARK. LOT
	DEPTH, FT.....						
	PARCEL LOCATION.....	A	A	A	A	A	B
CAS NUMBER	MATRIX.....		DUST	DUST			
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
319-84-6	Alpha-BHC		ND	ND			ND
319-85-7	Beta-BHC		ND	ND			ND
319-896-8	Delta-BHC		ND	ND			ND
58-89-9	Gamma-BHC		ND	ND			ND
76-44-8	Heptachlor						
309-00-2	Aldrin		ND	ND			ND
1024-67-3	Heptachlor Epoxide						
959-98-8	Endosulfan I						
60-57-1	Dieldrin		ND	ND			ND
72-55-9	4,4'-DDE		ND	ND			13180
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD		ND	ND			ND
1031-07-8	Endosulfan Sulfate						
50-29-3	4,4'-DDT		ND	ND			70090
72-43-5	Methoxychlor		ND	ND			ND
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran		ND	ND			ND
	Quintozene		ND	ND			ND
	Hexachlorophene						
	Carbaryl						
	Malathion		ND	ND			ND
	2,4,5-TP						
	2,4-D						
	Diphenamid						

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	10/19/87	10/19/87	10/19/87	10/27/87	10/27/87	10/27/87
	TIME						
	SAMPLE EVENT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT	USEPA TAT
	LABORATORY	EPA	ENVIROTECH	ENVIROTECH	EPA	EPA	ENVIR. PROFILE
	LAB SAMPLE ID NO.	090893	090891	090894	091076	091077	091083
	FIELD SAMPLE ID NO.	38	39	40	41	42	49
	FIELD LOCATION	UST "C"	LAB AREA	DUST TOWER BLDG 5	COMPRESSOR 1	COMPRESSOR 2	OFF. BLDG PARK. LOT
	DEPTH, FT						
	PARCEL LOCATION	A	A	A	A	A	B
CAS NUMBER	MATRIX		DUST	DUST			
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242						
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260	2000			2000	2000	

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

3001393

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/27/87	10/27/87	10/27/87	12/30/87	12/30/87
	TIME.....					
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT		
	LABORATORY.....	ENVIR. PROFILE	ENVIR. PROFILE	ENVIR. PROFILE		
	LAB SAMPLE ID NO.....	*091084*	*091085*	*091086*		
	FIELD SAMPLE ID NO.....	50	51	52	53	54
	FIELD LOCATION.....	E. CORNER CRIDER LOT	FRONT OF PINE TREES	N. CORNER CRIDER LOT	B-1 SURFACE	B-1 DEEP
	DEPTH, FT.....					
	PARCEL LOCATION.....	C	A	C		
CAS NUMBER	MATRIX.....					
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
319-84-6	Alpha-BHC	ND	ND	ND	ND	ND
319-85-7	Beta-BHC	ND	ND	ND	140J	98J
319-896-8	Delta-BHC	ND	ND	ND	ND	ND
58-89-9	Gamma-BHC	ND	ND	ND	ND	ND
76-44-8	Heptachlor					
309-00-2	Aldrin	ND	ND	ND	ND	ND
1024-67-3	Heptachlor Epoxide				ND	ND
959-98-8	Endosulfan I					
60-57-1	Dieldrin	ND	ND	ND	ND	ND
72-55-9	4,4'-DDE	4980	7780	530	4800	ND
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD	ND	ND	ND	ND	ND
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT	3900	1710	490	610000	320000
72-43-5	Methoxychlor	ND	ND	ND	ND	ND
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	ND	ND	ND	ND	ND
	Quintozene	ND	ND	ND	ND	ND
	Hexachlorophene					
	Carbaryl					
	Malathion	ND	ND	ND	ND	ND
	2,4,5-TP					
	2,4-D					
	Diphenamid					

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/27/87	10/27/87	10/27/87	12/30/87	12/30/87
	TIME.....					
	SAMPLE EVENT.....	USEPA TAT	USEPA TAT	USEPA TAT		
	LABORATORY.....	ENVIR. PROFILE	ENVIR. PROFILE	ENVIR. PROFILE		
	LAB SAMPLE ID NO.....	091084	091085	091086		
	FIELD SAMPLE ID NO.....	50	51	52	53	54
	FIELD LOCATION.....	E. CORNER CRIDER LOT	FRONT OF PINE TREES	N. CORNER CRIDER LOT	B-1 SURFACE	B-1 DEEP
	DEPTH, FT.....					
	PARCEL LOCATION.....	C	A	C		
CAS NUMBER	MATRIX.....					
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242		THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

300395

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	12/30/87	12/30/87	12/30/87	12/30/87	12/30/87	12/30/87
	TIME.....						
	SAMPLE EVENT.....						
	LABORATORY.....						
	LAB SAMPLE ID NO.....						
	FIELD SAMPLE ID NO.....	55	56	57	58	59	60
	FIELD LOCATION.....	B-2	B-2	B-3	B-3	B-4	B-4
		SURFACE	DEEP	SURFACE	DEEP	SURFACE	DEEP
	DEPTH, FT.....						
	PARCEL LOCATION.....						
CAS NUMBER	MATRIX.....						
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
319-84-6	Alpha-BHC	ND	ND	ND	710	ND	ND
319-85-7	Beta-BHC	140J	ND	8200	530	620	160
319-896-8	Delta-BHC	ND	ND	ND	ND	ND	ND
58-89-9	Gamma-BHC	ND	ND	90000	12000	ND	ND
76-44-8	Heptachlor						
309-00-2	Aldrin	ND	ND	ND	ND	ND	ND
1024-67-3	Heptachlor Epoxide	ND	ND	ND	ND	1400	ND
959-98-8	Endosulfan I						
60-57-1	Dieldrin	2800	ND	ND	ND	ND	ND
72-55-9	4,4'-DDE	ND	280	ND	ND	440000	210J
72-20-8	Endrin						
33213-65-9	Endosulfan II						
72-54-8	4,4'-DDD	ND	ND	950000	ND	ND	ND
1031-07-8	Endosulfan Sulfate						
50-29-3	4,4'-DDT	40000	3300	5500000	640000	1500000	2900
72-43-5	Methoxychlor	ND	ND	ND	ND	ND	ND
53494-70-5	Endrin Ketone						
57-74-9	Chlordane						
8001-35-2	Toxaphene						
	Botran	ND	ND	ND	ND	ND	ND
	Quintozene	ND	ND	ND	ND	ND	ND
	Hexachlorophene						
	Carbaryl						
	Malathion	ND	ND	ND	ND	ND	ND
	2,4,5-TP						
	2,4-D						
	Diphenamid						

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	12/30/87	12/30/87	12/30/87	12/30/87	12/30/87	12/30/87
	TIME						
	SAMPLE EVENT						
	LABORATORY						
	LAB SAMPLE ID NO.						
	FIELD SAMPLE ID NO.	55	56	57	58	59	60
	FIELD LOCATION	B-2	B-2	B-3	B-3	B-4	B-4
		SURFACE	DEEP	SURFACE	DEEP	SURFACE	DEEP
	DEPTH, FT						
	PARCEL LOCATION						
CAS NUMBER	MATRIX						
	ORGANICS - Pesticides/Herbicides/PCB	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
12674-11-2	Aroclor-1016						
11104-28-2	Aroclor-1221						
11141-16-5	Aroclor-1232						
53469-21-9	Aroclor-1242	THESE SAMPLES NOT ANALYZED FOR PCB's					
12672-29-6	Aroclor-1248						
11097-69-1	Aroclor-1254						
11096-82-5	Aroclor-1260						

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

300397

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

CAS NUMBER						
	DATE	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME					
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH
	LAB SAMPLE ID NO.					
	FIELD SAMPLE ID NO.	PS1P	PS2P	PS3P	PS4P	PS5P
	FIELD LOCATION					
	DEPTH, FT					
	PARCEL LOCATION					
	MATRIX	AIR	AIR	AIR	AIR	AIR
	ORGANICS - Pesticides/Herbicides/PCB	mg/cu.m	mg/cu.m	mg/cu.m	mg/cu.m	mg/cu.m
319-84-6	Alpha-BHC	2.7E-06	4.1E-06	ND	4.0E-06	6.5E-06
319-85-7	Beta-BHC					
319-896-8	Delta-BHC					
58-89-9	Gamma-BHC					
76-44-8	Heptachlor					
309-00-2	Aldrin					
1024-67-3	Heptachlor Epoxide					
959-98-8	Endosulfan I					
60-57-1	Dieldrin					
72-55-9	4,4'-DDE					
72-20-8	Endrin					
33213-65-9	Endosulfan II					
72-54-8	4,4'-DDD					
1031-07-8	Endosulfan Sulfate					
50-29-3	4,4'-DDT	0.0001	0.0002	4.4E-05	0.0002	0.0002
72-43-5	Methoxychlor					
53494-70-5	Endrin Ketone					
57-74-9	Chlordane					
8001-35-2	Toxaphene					
	Botran	0.0001	0.0002	0.0002	0.0001	0.0001
	Quintozene	9.0E-06	1.1E-05	3.7E-05	0.0001	4.4E-05
	Hexachlorophene					
	Carbaryl					
	Malathion	0.190U	0.190U	0.190U	0.190U	0.190U
	2,4,5-TP					
	2,4-D					
	Diphenamid					

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87	10/9/87	10/9/87
	TIME.....					
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH
	LAB SAMPLE ID NO.....					
	FIELD SAMPLE ID NO.....	PS1P	PS2P	PS3P	PS4P	PS5P
	FIELD LOCATION.....					
	DEPTH, FT.....					
	PARCEL LOCATION.....					
CAS NUMBER	MATRIX.....	AIR	AIR	AIR	AIR	AIR
	ORGANICS - Pesticides/Herbicides/PCB	mg/cu.m	mg/cu.m	mg/cu.m	mg/cu.m	mg/cu.m
12674-11-2	Aroclor-1016					
11104-28-2	Aroclor-1221					
11141-16-5	Aroclor-1232					
53469-21-9	Aroclor-1242		THESE SAMPLES NOT ANALYZED FOR PCB's			
12672-29-6	Aroclor-1248					
11097-69-1	Aroclor-1254					
11096-82-5	Aroclor-1260					

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- [#] Compound detected above detection lim

300399

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE.....	10/9/87	10/9/87	10/9/87
	TIME.....			
	SAMPLE EVENT.....	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY.....	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH
	LAB SAMPLE ID NO.....			
	FIELD SAMPLE ID NO.....	PS6P	PS7P	PS8P
	FIELD LOCATION.....			
	DEPTH, FT.....			
	PARCEL LOCATION.....			
CAS NUMBER	MATRIX.....	AIR	AIR	AIR
	ORGANICS - Pesticides/Herbicides/PCB	mg/cu.m	mg/cu.m	mg/cu.m
319-84-6	Alpha-BHC	3.5E-06	ND	2.9E-06
319-85-7	Beta-BHC			
319-896-8	Delta-BHC			
58-89-9	Gamma-BHC			
76-44-8	Heptachlor			
309-00-2	Aldrin			
1024-67-3	Heptachlor Epoxide			
959-98-8	Endosulfan I			
60-57-1	Dieldrin			
72-55-9	4,4'-DDE			
72-20-8	Endrin			
33213-65-9	Endosulfan II			
72-54-8	4.4'-DDD			
1031-07-8	Endosulfan Sulfate			
50-29-3	4,4'-DDT	0.0001	4.4E-05	4.8E-05
72-43-5	Methoxychlor			
53494-70-5	Endrin Ketone			
57-74-9	Chlordane			
8001-35-2	Toxaphene			
	Botran	3.8E-05	2.9E-06	1.7E-05
	Quintozene	2.4E-06	ND	5.0E-06
	Hexachlorophene			
	Carbaryl			
	Malathion	0.190U	0.190U	0.190U
	2,4,5-TP			
	2,4-D			
	Diphenamid			

TABLE A - 4
SUMMARY OF NJDEPE AND USEPA ANALYTICAL RESULTS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

	DATE	10/9/87	10/9/87	10/9/87
	TIME			
	SAMPLE EVENT	USEPA ERT	USEPA ERT	USEPA ERT
	LABORATORY	ENVIR. HEALTH	ENVIR. HEALTH	ENVIR. HEALTH
	LAB SAMPLE ID NO.			
	FIELD SAMPLE ID NO.	PS6P	PS7P	PS8P
	FIELD LOCATION			
	DEPTH, FT			
	PARCEL LOCATION			
CAS NUMBER	MATRIX	AIR	AIR	AIR
	ORGANICS - Pesticides/Herbicides/PCB	mg/cu.m	mg/cu.m	mg/cu.m
12674-11-2	Aroclor-1016			
11104-28-2	Aroclor-1221			
11141-16-5	Aroclor-1232			
53469-21-9	Aroclor-1242	THESE SAMPLES NOT ANALYZED FOR PCB's		
12672-29-6	Aroclor-1248			
11097-69-1	Aroclor-1254			
11096-82-5	Aroclor-1260			

Notes:

- U Compound was not detected.
- J Estimated value.
- B Analyte also detected in blank.
- N Not detected.
- C Pesticide result confirmed by GC/MS.
- ug/kg Microgram per kilogram.
- ug/L Microgram per liter.
- mg/kg Milligram per kilogram.
- mg/cu. m Milligram per cubic meter
- ppb Parts per billion.
- # Compound detected above detection lim

3001401

NJDOT SAMPLE DATA
JULY 1991

300402

BANR.DOC/93

New Albany Road Summary Report

Sample ID	Location (Station/Offset)		Depth	Date	Lab/Test	Notable Observations	Laboratory Observations
NAR 1	0+13	17'L	0-6"	7-23-91	Organochlor Pesticide		Total Pesticide = 21.809 ppm
NAR 2	0+33	17'L	0-6"	"	"		4.096
NAR 3	0+53	"	"	"	"		3.251
NAR 4	0+73	"	"	"	"		2.025
NAR 5	0+93	"	"	"	"		3.758
NAR 6	1+13	"	"	"	"		33.686
NAR 7	1+33	"	"	"	"		5.118
NAR 8	1+53	"	"	"	"		3.220
NAR 9	1+73	"	"	"	"		8.108
NAR 10	1+93	22'L	"	"	"		8.801
NAR 11	2+40	22'L	"	"	"		6.877
NAR 12	2+60	17'L	"	"	"		5.132
NAR 13	2+80	17'L	"	"	"		6.354
NAR 14	3+00	"	"	"	"		6.661
NAR 15	3+20	"	"	"	"		7.342
NAR 16	3+40	"	"	"	"		8.130

New Albany Road Summary Report Cont'd

Sample ID	Location (Station/Offset)		Depth	Date	Lab/Test	Notable Observations	Laboratory Observations
COMP-01				7-24-92	ECRA Class.	5 part composite, 100 cy stock	PCB = 7 ppm
NAR-A	Stockpile Material		12-18"	8-14-92	ECRA Organochlor Pesticide		ND
NAR-B	Drainage Outfall Wall		0-6"	8-14-92	ECRA Organochlor Pesticide	Strong odor present at time of sampling	ND
NAR-C	Drainage Wall Sheen Producing Soil		0-6"	8-14-92	ECRA Organochlor Pesticide		ND
NAR-D	15' from outfall surface center of stream			8-14-92	ECRA Organochlor Pesticide		ND
NAR-E	Drainage outfall wall resample		0-6"	9-2-92	DEPE Lab BNA, VOA Carbaryl, Malathion	Strong odor HNU reading of 110, heavy sheen	Carbaryl - ND Malathion - ND Fuel oil fingerprinted
NAR-F	3+88	16'L	0-6" 12-18"	9-29-92	DEPE Lab PCB		ND
NAR-G	4+38	16'L	0-6" 12-18"	9-29-92	DEPE Lab PCB		ND

New Albany Road Summary Report Cont'd.

Sample ID	Location (Station/Offset)		Depth	Date	Lab/Test	Notable Observations	Laboratory Observations
NAR-H	4+88	17'L	0-6" 12-18"	9-29-92	DEPE Lab PCB		ND
NAR-I	5+38	16'L	0-6" 12-18"	9-29-92	DEPE Lab PCB		ND
NAR-J	3+00	17'R	0-6" 12-18"	9-29-92	DEPE Lab PCB		
NAR-K	2+50	17'R	0-6" 12-18"	9-29-92	DEPE Lab PCB, Pesticide	Sample had peak while running PCB analysis; ran pesticide analysis on sample	PCB - ND Total Pesticide - 92.72
NAR-M	Stockpile Material		18-24"	10-15-92	NYTEST Lab TPHC, TCLP, PCB, VOA, Reactivity Igniability	Classification of stockpile material	PCB - 65 ppm

SAMPLE LOCATION MAP
APRIL 1986
(Best Available Copy)

← MIDDLETOWN — NEW ALBANY ROAD — MAIN ROADS →

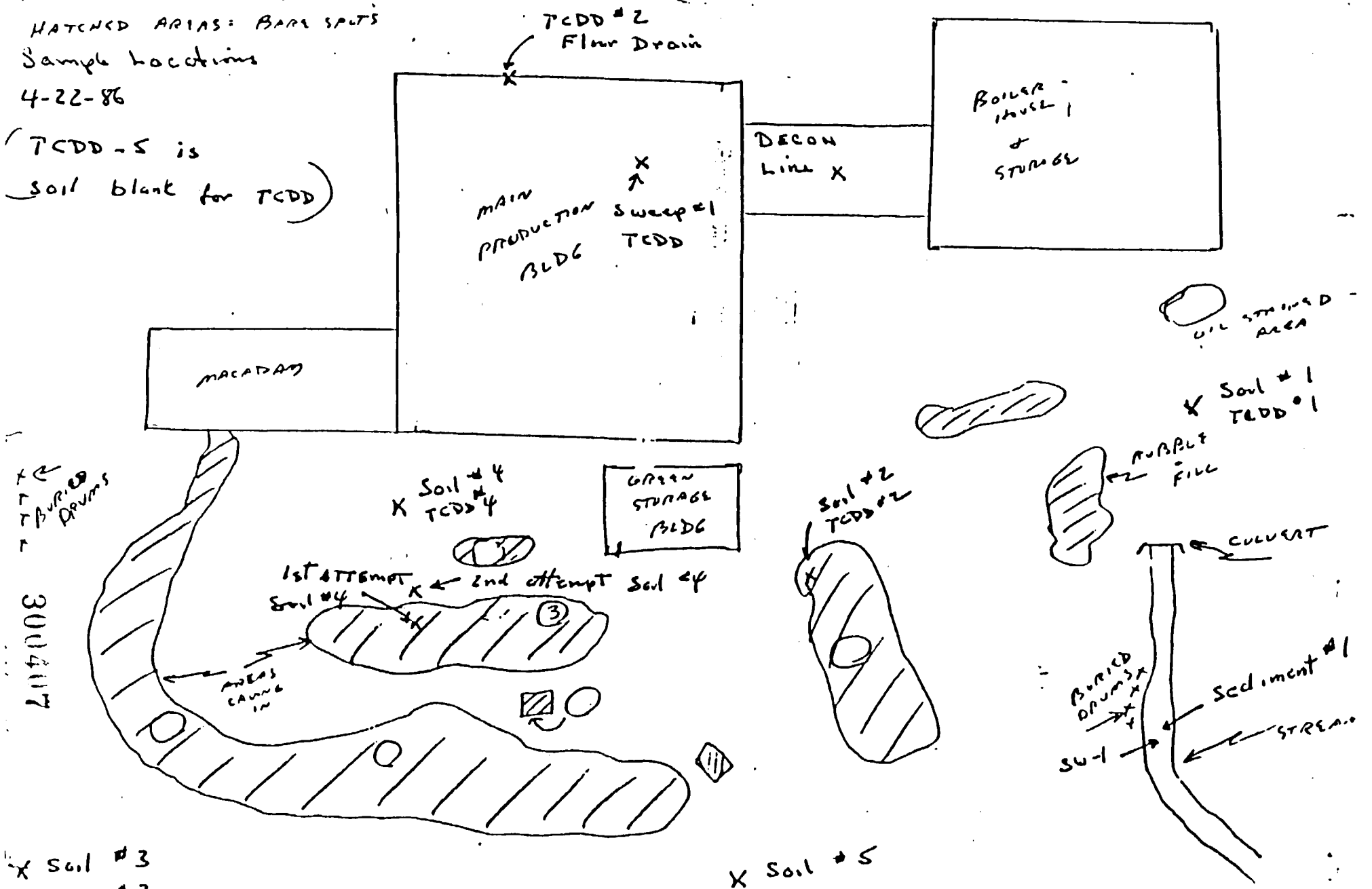
MEASUREMENTS ARE APPROXIMATE

HATCHED AREAS: BARE SPOTS

Sample locations

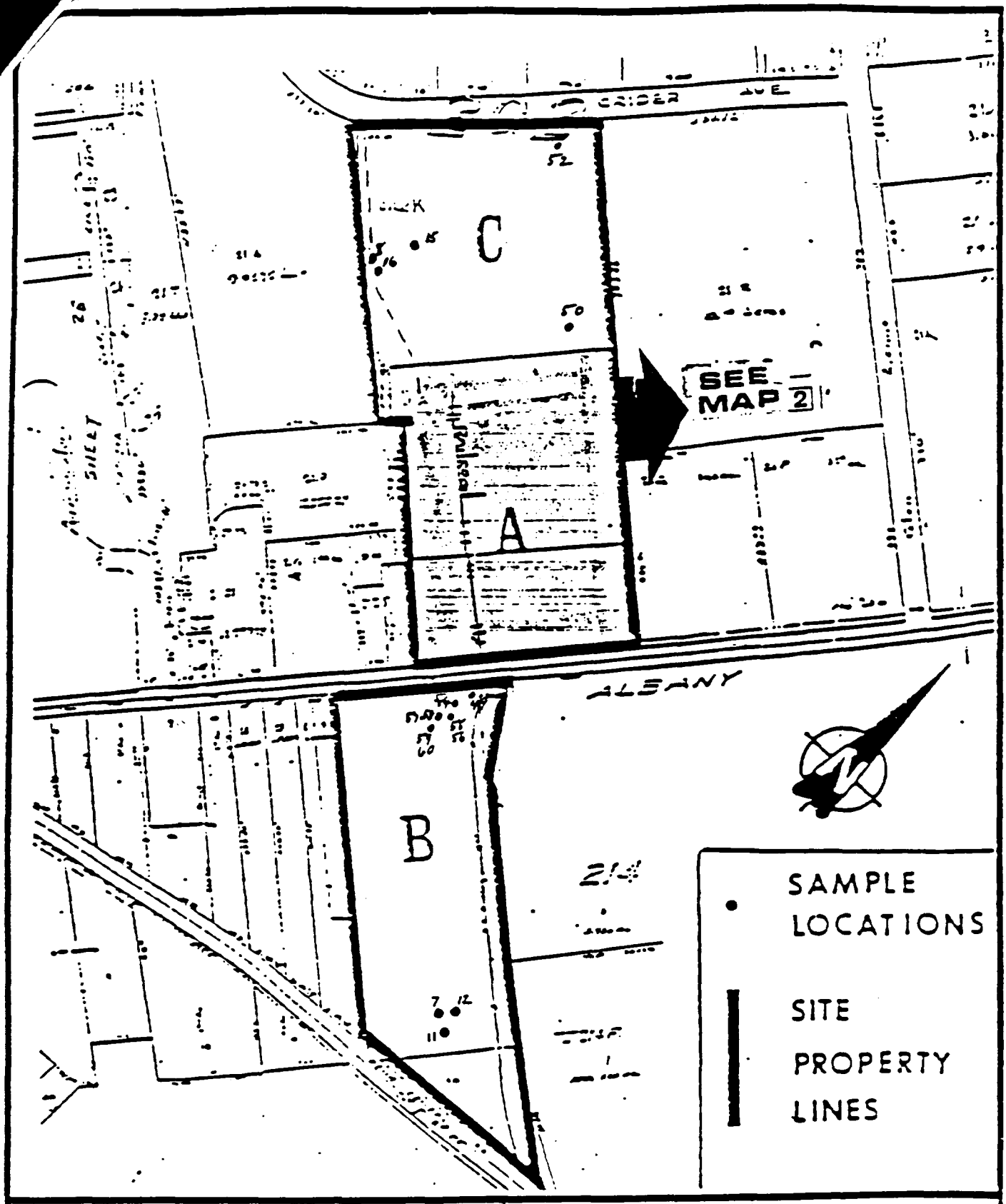
4-22-86

TCDD-5 is soil blank for TCDD



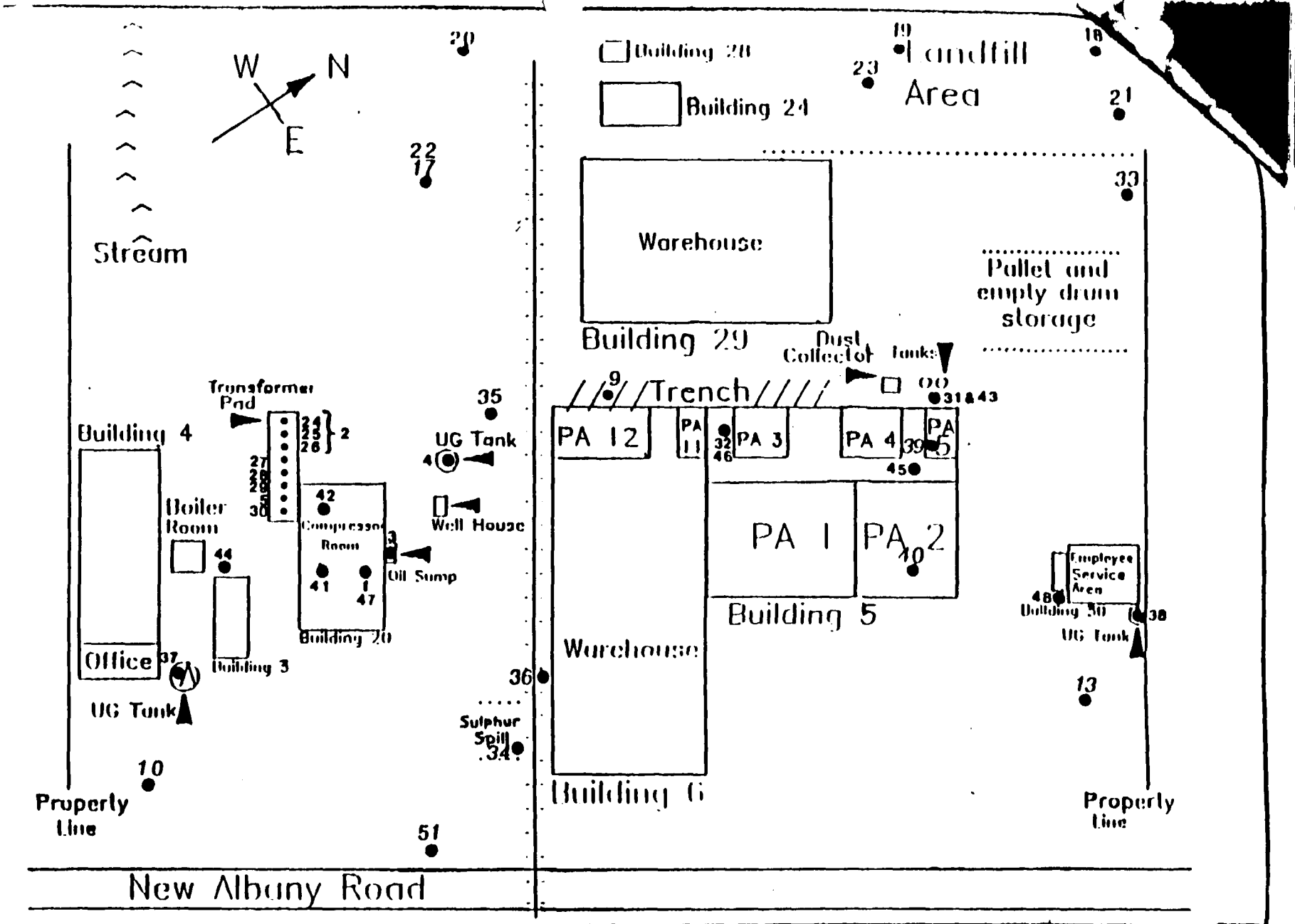
30411-7

SAMPLE LOCATION MAPS
October 1987 and December 1987
(Best Available Copies)



WESTON SPILL PREVENTION & EMERGENCY RESPONSE DIVISION	EPA PM Eugene Dominack	Map 1
In Association with ICF Technology Inc., C.C. Johnson & Associates, Inc., Resource Applications, Inc., Geo/Resource Consultants, Inc., and Environmental Toxicology International, Inc.	TAT PM Jeff M. Beckte/	Lots B, C Sample Locations

300409


W
N
E
Stream
Building 28
Building 24
Landfill Area
Warehouse
Building 29
Pallet and empty drum storage
Dust Collector
Tanks
Trench
PA 12
PA 11
PA 3
PA 4
PA 5
PA 1
PA 2
Building 5
Warehouse
Building 6
Transformer Pad
Building 4
Boiler Room
Office
UG Tank
Building 3
Compressor Room
Building 20
Oil Sump
Well House
UG Tank
Sulphur Spill
Employee Service Area
Building 50
UG Tank
Property Line
Property Line
New Albany Road
19
18
23
21
22
17
33
29
35
4
9
31 & 43
32
46
39
45
42
30
24
25
26
2
27
28
29
5
3
41
47
44
37
36
34
10
48
38
13
51
22 - Sample Location & Number (Soils & Water)
42 - Sample Location & Number (Oils & Asbestos)
WESTON
SPILL PREVENTION & EMERGENCY RESPONSE DIVISION
In Association with R & D Technology Inc., C.C. Johnson & Associates, Inc., Resource Applications, Inc., Geo/Resource Consultants, Inc., and Environmental Toxicology International, Inc.
EPA PM
Eugene Dominach
TAT PM
Jeff Dechtel
Figure 3
Sample Map - Lot A
Site Map

300410

NJDOT SAMPLING LOCATION MAP
JULY 1991

(Best Available Copy)

EPA REGION II
SCANNING TRACKING SHEET

DOC ID # 38783

DOC TITLE/SUBJECT:

CONSTRUCTION PLANS
NEW ALBANY ROAD

THIS DOCUMENT IS OVERSIZED AND CAN BE LOCATED IN THE ADMINISTRATIVE RECORD FILE AT THE

SUPERFUND RECORDS CENTER
290 BROADWAY, 18TH FLOOR
NEW YORK, NY 10007

APPENDIX B

BORING LOGS

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-1

COORDINATES
N 412,721 E 1,913,688
SURFACE EL: 67.98'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	19	4-14 14-5		DENSE RED ORANGE COARSE SAND, LENS OF GRAY AND BROWN SAND, TRACE OF COBBLES AT ~5', WET	sp	
		S-2	20	6-10 14-10				
	5	S-3	17	14-17 21				LAB SAMPLE COLLECTED FROM S-3, AND S-4
		S-4	12	9-14 20				
60		S-5	20	3-4 3-5				
	10	S-6	15	5-6 6-8		11.0'		LAB SAMPLE COLLECTED FROM S-6
		S-7	7	12-14 16-6		MEDIUM DENSE, ORANGE RED, GRAVELLY SAND/SANDY GRAVEL, SOME LARGE COBBLES, WET	sw/gw	
	15	S-8	16	4-3 5-5		15.0' LOOSE, ORANGE RED, COARSE SAND, LENSES OF ORANGE RED CLAY (15.2'-15.8') AND BROWN SAND, WET	sp	
50		S-9	18	1-1 2-1				
	20	S-10	22	4-7 8-8		20.4' MEDIUM STIFF, BLACK GRAY CLAY, WET 20.8'	cl	
						LOOSE BLACK SAND, TRACE SILT, SOME GRAVEL, WET 23.5'	sw	
43.48		S-11	24	3-4 4-4		STIFF, BLACK GRAY CLAY, WET 24.5'	cl	
	25					BOTTOM OF BORING 24.5'		MW-3 INSTALLED. SEE WELL INSTALLATION SHEETS FOR DETAILS.
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 1-5-90
DATE COMPLETED: 1-5-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH 6.1' DATE/TIME 3-20-90
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 6 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
LPD

BORING NO. B-1
SHEET 1 OF 1

300415

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-2

COORDINATES
N 412,792 E 1,913,565
SURFACE EL: 65.81'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	9	3-7 7-8		LOOSE TO MEDIUM DENSE, RED/REDDISH GRAY TO BROWN, FINE TO COARSE SAND, TRACE TO SOME CLAY AND/OR GRAVEL, MOIST, WET AFTER ~5.0' CLAYEY FROM ~2.2'-3.0' AND ~4.8'-5.5'		LAB SAMPLE COLLECTED FROM S-1
		S-2	17	3-4 5-6				
60	5	S-3	19	3-5 7-9			sw	
		S-4	15	3-5 7-9				
	10	S-5	14	3-5 6-8				LAB SAMPLE COLLECTED FROM S-5
		S-6	13	WOT-4 6-9		14.8'		
50	15	S-7	21	2-5 5-7		LOOSE, BROWN SAND AND GRAVEL, TRACE CLAY, SOME LARGE QUARTZ GRAVEL, WET	gc	
		S-8	17	18-9 8-8		18.5' MEDIUM STIFF, RED TO BROWN, CLAY, SOME SANDY LENSES, WET 19.8'	cl	Fe STAINING
	20	S-9	18	3-5 5-6		LOOSE, BROWN SAND, WET 20.2' STIFF BLACK GRAY CLAY 22.0'	sp cl	
43.81	25					BOTTOM OF BORING 22.0'		CEMENT/BENTONITE GROUT TO SURFACE
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-14-89
DATE COMPLETED: 12-14-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: RICK FISHER

F-188
LPD

BORING NO. B-2
SHEET 1 OF 1

300416

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-2A

COORDINATES
N 412,792 E 1,913,565
SURFACE EL: 65.81'
(NOTE: OFFSET SLIGHTLY FROM B-2)

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0					DESTRUCTIVE DRILLING SEE LOG OF BORING NO. B-2 FOR DETAILED DESCRIPTION		
	5					5.0'		
60 59.31		S-1	18	5-7 9		MEDIUM DENSE BROWN GRAY MEDIUM SAND, WET 6.5'	SW	LAB SAMPLE COLLECTED FROM S-1
						BOTTOM OF BORING 6.5'		CEMENT/BENTONITE GROUT TO SURFACE
	10							
	15							
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-15-89
DATE COMPLETED: 12-15-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: JIM STAVOLA

F-188
LPD

BORING NO. B-2A
SHEET 1 OF 1

300417

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-3

COORDINATES
N 412,711 E 1,913,518
SURFACE EL: 66.74'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	18	2-2 3-3		LOOSE, LIGHT TO DARK BROWN CLAYEY FINE TO MEDIUM SAND AND SANDY CLAY, DRY	sc	LAB SAMPLE COLLECTED FROM S-1
		S-2	18	4-5 5-5		3.5' LOOSE, REDDISH BROWN, FINE TO COARSE SAND, TRACE CLAY, TRACE QUARTZ COBBLES WITH GRAVEL BELOW 9.8', WET		
60	5	S-3	19	2-5 5-6			sw	LAB SAMPLE COLLECTED FROM S-3
		S-4	15	3-5 5-5				
	10	S-5	10	3-3 6-9				LAB SAMPLE COLLECTED FROM S-5
		S-6	2	8-6 7-8				
50	15	S-7	20	4-4 6-8		16.0' MEDIUM STIFF RED, SANDY CLAY, WET 16.4' MEDIUM STIFF RED MOTTLED CLAY, WET 16.7' STIFF, BLACK-GRAY CLAY, WET 17.0'	cl cl cl	
49.74	20					BOTTOM OF BORING 17.0'		CEMENT/BENTONITE GROUT TO SURFACE
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-15-89
DATE COMPLETED: 12-15-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: JIM STAVOLA

F-188
LPD

BORING NO. B-3
SHEET 1 OF 1

300418

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-4

COORDINATES
N 412,474 E 1,913,388
SURFACE EL: 65.53'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	18	5-6 7-7		LOOSE TO MEDIUM DENSE, REDDISH BROWN TO ORANGE BROWN, FINE TO MEDIUM SAND, TRACE OF SILT, DRY, WET BELOW ~7.0', INTERMITTENT LENSES OF BLACK SAND BELOW ~7.0'		LAB SAMPLE COLLECTED FROM S-1
		S-2	18	8-6 8-4				
60	5	S-3	19	2-4 8-7			sp	LAB SAMPLE COLLECTED FROM S-3
		S-4	15	3-4 3-4				
	10	S-5	21	2-3 4-8				LAB SAMPLE COLLECTED FROM S-5
		S-6	12	7-4 5-8				
50	15	S-7	12	3-4 4-12				
		S-8	15	7-5 5-4		18.3'		
	20					MEDIUM STIFF, ORANGE-RED CLAY, SOME SAND, MOIST 20.0'	cl	
		S-9	16	5-4 4-5		LOOSE, REDDISH BROWN, SAND, WET 20.3'	sp	
43.53						MEDIUM STIFF, BLACK-GRAY CLAY, TRACE SAND, MOIST 22.0'	cl	
						BOTTOM OF BORING 22.0'		CEMENT/BENTONITE GROUT TO SURFACE
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-19-89
DATE COMPLETED: 12-19-89
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ~7.0' DATE/TIME 12-20-89/0920
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: JERRY BIGNALL
HELPER: RICK FISHER

F-188
LPD

BORING NO. B-4
SHEET 1 OF 1

300419

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-5

COORDINATES
N 412,883 E 1,913,510
SURFACE EL: 64.45'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	24	9-9 7-6		MEDIUM DENSE, BROWN GRAY, CLAYEY SAND/ SANDY CLAY, LENS OF RED SAND BETWEEN 1.1' AND 1.2', TRACE PEBBLES, DRY TO MOIST, WET AT 4.0'	sc	
60		S-2	17	9-7 6-10		4.5'		WOOD CHIPS AT 3.0'
	5	S-3	5	12-12 8-7		MEDIUM DENSE TO DENSE RED BROWN, MEDIUM TO COARSE SAND, TRACE QUARTZ COBBLES WITH GRAVEL BELOW ~10.0', WET	sp	LAB SAMPLE COLLECTED FROM S-3
		S-4	20	3-3 6-6				
	10	S-5	18	18-21 16-13			sw	LAB SAMPLE COLLECTED FROM S-5
		S-6	18	5-4 4-3		13.5'		
50						MEDIUM STIFF REDDISH BROWN CLAY 14.0'	cl	
	15	S-7	22	3-5 6-9		STIFF BLUE GRAY CLAY, MOIST TO WET	cl	
44.95		S-8	22	2-5 7-9		19.5'		
	20					BOTTOM OF BORING 19.5'		CEMENT/BENTONITE GROUT TO SURFACE
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-11-89
DATE COMPLETED: 12-11-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: RICK FISHER

F-188
LPD

BORING NO. B-5
SHEET 1 OF 1

300420

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-6

COORDINATES
N 412,856 E 1,913,453
SURFACE EL: 64.69'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	15	3-4 5-4		FILL - VERY LOOSE TO LOOSE, BROWN TO REDDISH BROWN, MEDIUM SAND, TRACE OF SULFUR, SOME WOOD CHIPS NEAR SURFACE, MOIST TO DRY. THREE INCHES OF WHITE CLAY AT ~3.0' DEPTH		
		S-2	14	1-1 1-2				
60	5	S-3	15	6-19 22		6.4'		LAB SAMPLE COLLECTED FROM S-3 AND S-4
		S-4	14	12-17 23		LOOSE, ORANGE-BROWN TO DARK RED TO BROWN, MEDIUM TO FINE SAND, TRACE COBBLES, GRAVEL AFTER ~13.5', MOIST TO WET	sp	Fe STAINING
		S-5	17	2-4 5-5				
	10	S-6	10	1-1 2-2				LAB SAMPLE COLLECTED FROM S-6
50		S-7	13	9-14 12-31		15.5'		
47.69	15	S-8	18	5-5 6-6		SOFT TO MEDIUM STIFF BLACK-GRAY CLAY, SANDY TO 16.8', MOIST 17.0'	cl	
	20					BOTTOM OF BORING 17.0'		CEMENT/BENTONITE GROUT TO SURFACE
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-21-89
DATE COMPLETED: 12-21-89
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: JERRY BIGNALL
HELPER: RICK FISHER

F-188
LPD

BORING NO. B-6
SHEET 1 OF 1

300421

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-7

COORDINATES
N 412,710 E 1,913,424
SURFACE EL: 63.79'

ELEV (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	12	2-2 1-2		LOOSE, GRAY TO GREEN GRAY, MOTTLED FINE SAND, TRACE CLAY, TRACE QUARTZ COBBLES AT 4', MOIST TO WET	sp	WOOD STICKS IN SAMPLE
60		S-2	21	6-14 13-16		5.5'		
	5	S-3	18	12-9 10		LOOSE TO DENSE REDDISH BROWN AND BROWN, FINE TO MEDIUM SAND, TRACE COBBLES BELOW ~10.0', WET		LAB SAMPLE COLLECTED FROM S-3
		S-4	14	2-3 3-3			sp	
	10	S-5	18	14-26 27		12.0'		LAB SAMPLE COLLECTED FROM S-5
						SOFT, RED, CLAY, SOME SAND AND GRAVEL, LENS OF IRON-STAINED GRAVEL, WET 13.5'	cl	
50 49.29		S-6	8	4-5 4-4		STIFF BLACK CLAY, TRACE SAND 14.5'	cl	
	15					BOTTOM OF BORING 14.5'		CEMENT/BENTONITE GROUT TO SURFACE
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-17-89
DATE COMPLETED: 12-18-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH 5.0' DATE/TIME 12-18-89/1015
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: JAKE HITZELBERGER

F-188
LPD

BORING NO. B-7
SHEET 1 OF 1

300422

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-8

COORDINATES
N 412,700 E 1,913,332
SURFACE EL: 63.47'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	DESCRIPTION	USCS SYMBOL	REMARKS
	0				LOOSE, ORANGE-BROWN, SILTY SAND, DRY 1.0'	sm	
		S-1	17	5-4 4-4	MEDIUM STIFF, BROWN AND GRAY SILTY CLAY, SOME LIGHT GRAY SAND, DRY TO MOIST	cl	
60		S-2	21	6-9 12-17	4.8'		Fe STAINING AT 4.0' AND 6.5.
	5	S-3	18	8-15 10	LOOSE, GRAY AND REDDISH BROWN TO BROWN, MEDIUM SAND, TRACE SILT, MOIST COBBLES AT 5.5' AND 6.4'	sp	LAB SAMPLE COLLECTED FROM S-3
		S-4	20	6-9 7-7	10.2'		
	10	S-5	12	8-6 5-4	SOFT, REDDISH BROWN TO ORANGE, CLAY, SOME SAND, MOIST 10.75'	cl	LAB SAMPLE COLLECTED FROM S-5
50		S-6	20	2-4 3-4	MEDIUM STIFF BLACK TO GRAY CLAY, SANDY TO 15.5', DRY TO MOIST	cl	
	15	S-7	15	5-3 4-2	17.0'		
46.47					BOTTOM OF BORING 17.0'		CEMENT/BENTONITE GROUT TO SURFACE
	20						
	25						
	30						
	35						

PROJECT NO.: 89-595
DATE BEGAN: 12-20-89
DATE COMPLETED: 12-20-89
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: JERRY BIGNALL
HELPER: RICK FISHER

F-188
LPD

300423

BORING NO. B-8
SHEET 1 OF 1

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-9

COORDINATES
N 412,619 E 1,913,299
SURFACE EL: 62.38'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
60	0	S-1	20	2-1 2-5		VERY LOOSE, GRAY BROWN, MOTTLED CLAYEY SAND, TRACE SILT, MOIST 3.5'	sc	
		S-2	19	2-9 21-6		MEDIUM DENSE, BROWN MEDIUM SAND, TRACE COBBLES, WET 5.0'	sp	
	5	S-3	13	2-3 4-4		LOOSE, REDDISH BROWN MEDIUM SAND, TRACE CLAY AND GRAVEL, WET 7.2'	sp	LAB SAMPLE COLLECTED FROM S-3
		S-4	17	2-4 4-4		SOFT REDDISH BROWN CLAY, TRACE SAND AND GRAVEL 8.0'	cl	
50.38	10	S-5	20	1-2 3-4		STIFF, BLACK GRAY CLAY, LENSES OF BLACK SAND, WET 12.0'	cl	LAB SAMPLE COLLECTED FROM S-5
	15					BOTTOM OF BORING 12.0'		CEMENT/BENTONITE GROUT TO SURFACE
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-17-89
DATE COMPLETED: 12-17-89
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: JAKE HITZELBERGER

F-188
LPD

BORING NO. B-9
SHEET 1 OF 1

300424

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-10

COORDINATES
N 412,508 E 1,913,314
SURFACE EL: 63.48'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	14	2-5 15-6		LOOSE TO MEDIUM DENSE, GRAY CLAYEY SILTY SAND, SOME SANDY CLAY, TRACE ROUNDED QUARTZ GRAVEL, DRY TO 3.1', MOIST TO WET	sc	
60		S-2	22	4-6 4-6				
	5	S-3	22	4-9 6-12		5.7' LOOSE, RED, MEDIUM TO COARSE SAND, TRACE GRAVEL AND CLAY, MOIST TO WET	sp	LAB SAMPLE COLLECTED FROM S-3
		S-4	20	4-9 7-7		SANDY CLAY LAYERS BETWEEN 11'-12'		
	10	S-5	24	2-1 3-2				LAB SAMPLE COLLECTED FROM S-5
50		S-6	20	2-4 4-5		12.7' MEDIUM STIFF BLUE-GRAY CLAY, LENS OF SAND AT 16.5'	cl	
46.48	15	S-7	24	2-2 5-4		17.0'		
						BOTTOM OF BORING 17.0'		CEMENT/BENTONITE GROUT TO SURFACE
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-12-89
DATE COMPLETED: 12-12-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: RICK FISHER

F-188
LPD

BORING NO. B-10
SHEET 1 OF 1

300425

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-11

COORDINATES
N 412,433 E 1,913,287
SURFACE EL: 63.68'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	24	3-4 4-5		LOOSE, GRAY, MEDIUM SAND, TRACE SILT AND ORANGE BROWN SAND, MOIST TO WET	sp	
60		S-2	18	6-7 6-8		3.5'		
		S-3	14	5-5 4		MEDIUM STIFF REDDISH BROWN AND ORANGE TO GRAY CLAY, MOIST	cl	LAB SAMPLE COLLECTED FROM S-3 AND S-4
	5	S-4	18	8-9 10		5.5'		
		S-5	25	3-3 3-4		MEDIUM DENSE, BLACK-GRAY, CLAYEY SAND, LENSES OF BLACK GRAY CLAY AND BLACK SAND, MOIST	sc	
	10	S-6	23	2-5 5-7				LAB SAMPLE COLLECTED FROM S-6
50		S-7	12	4-5 8-10				
	15	S-8	23	4-6 7-6		15.2'		
46.68						STIFF, BLACK-GRAY CLAY, MOIST 17.0'	cl	
	20					BOTTOM OF BORING 17.0'		MW-4 INSTALLED. SEE WELL INSTALLATION SHEETS FOR DETAILS.
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 1-4-90
DATE COMPLETED: 1-4-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH 1.8' DATE/TIME 3-20-90
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 6 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: TROY BROWN

F-188
LPD

BORING NO. B-11
SHEET 1 OF 1

300426

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-12

COORDINATES
N 412,498 E 1,913,234
SURFACE EL: 61.15'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
60	0	S-1	12	3-4 4-2		MEDIUM STIFF, BROWN, SANDY CLAY, TRACE GRAVEL 1.0'	cl	
		S-2	2	WOT-WOT 2-18		LOOSE, BLACK AND GRAY, SANDY GRAVEL, WET 6.0'	gw	
	5	S-3	3	25-3 4-2		LOOSE, BROWN, MEDIUM SAND, TRACE TO SOME CLAY AND GRAVEL, WET ~9.8'	sw	LAB SAMPLE COLLECTED FROM S-3
		S-4	6	7-6 3-2				
	10	S-5	24	1-1 4-4		SOFT, REDDISH BROWN, CLAY AND SAND, WET 10.6'	sc	LAB SAMPLE COLLECTED FROM S-5
50						SOFT, BLACK AND GRAY, CLAY, INTERBEDDED WITH BLACK FINE SAND, MOIST TO WET 13.5'	cl	
		S-6	24	2-3 3-4		LOOSE, GREEN AND GRAY SAND AND GRAVEL, TRACE CLAY, WET 14.5'	sw gw	
	15	S-7	20	3-3 4-4		MEDIUM STIFF, GRAY-BLACK, SANDY CLAY, TRACE SAND AND GRAVEL, WET 17.0'	cl	
44.15						BOTTOM OF BORING 17.0'		CEMENT/BENTONITE GROUT TO SURFACE
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-19-89
DATE COMPLETED: 12-19-89
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: RICK FISHER

F-188
LPD

BORING NO. B-12
SHEET 1 OF 1

300427

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-13

COORDINATES
N 412,824 E 1,913,367
SURFACE EL: 63.72'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	18	2-5 10-15		MEDIUM DENSE, BROWN, FINE SAND, TRACE QUARTZ GRAVEL, DRY (0'-2'), WET AT 3'	sp	
60		S-2	20	5-8 8-10		~4.8'		
	5	S-3	17	3-7 8-7		LOOSE, REDDISH BROWN, FINE TO MEDIUM SAND AND GRAVEL, TRACE CLAY, WET 5.2'	sw gw	LAB SAMPLE COLLECTED FROM S-3
		S-4	5	2-2 2-4		SOFT, RED, SANDY CLAY, SOME GRAVEL, WET	cl	
	10	S-5	21	2-2 2-3		11.0'		LAB SAMPLE COLLECTED FROM S-5
						SOFT, GRAY BLACK CLAY, LENSES OF SAND, WET ~12.5'	cl	
50		S-6	18	2-2 4-4		LOOSE, BLACK, MEDIUM SAND, WET 13.5'	sp	
49.22						STIFF, BLACK CLAY, WET 14.5'	cl	
	15					BOTTOM OF BORING 14.5'		CEMENT/BENTONITE GROUT TO SURFACE
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-13-89
DATE COMPLETED: 12-13-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: RICK FISHER

F-188
LPD

300428

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-14

COORDINATES
N 412,671 E 1,913,250
SURFACE EL: 62.13'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
60	0	S-1	20	5-12 15-16		LOOSE TO MEDIUM DENSE, BROWN AND GRAY, MOTTLED FINE TO MEDIUM SAND, TRACE SILT AND CLAY, DRY (0'-2'), WET AT 2.5'	sp	
		S-2	18	4-5 5-9				
	5	S-3	17	4-4 4-4		~7.2'		LAB SAMPLE COLLECTED FROM S-3
		S-4	1	4-2 2-3		VERY LOOSE, REDDISH BROWN, ANGULAR GRAVEL, TRACE CLAY, WET ~9.7'	gp	Fe STAINING
50.13	10	S-5	18	4-1 3-5		STIFF, BLACK GRAY, CLAY, SOME SAND LENSES, WET 12.0'	cl	LAB SAMPLE COLLECTED FROM S-5
						BOTTOM OF BORING 12.0'		CEMENT/BENTONITE GROUT TO SURFACE
	15							
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 12-13-89
DATE COMPLETED: 12-14-89
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING DIEDRICH D-50 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: TROY BROWN
HELPER: RICK FISHER

F-188
LPD

BORING NO. B-14
SHEET 1 OF 1

300429

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-15

COORDINATES
N 412,615 E 1,913,187
SURFACE EL: 60.21'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
60	0	S 1	18	1-2 2-4		LOOSE, BROWN, TAN, AND GRAY, MEDIUM SAND, SOME SILT, TRACE GRAVEL, MOIST	sp	
		S 2	18	7-10 8-11		3.5' MEDIUM STIFF, MAROON AND ORANGE-BROWN CLAY, TRACE RED SAND AND GRAY CLAY ~5.0'	cl	
	5	S 3	18	2-5 5-8		LOOSE, BROWN TO ORANGE BROWN, MEDIUM SAND, TRACE SILT, MOIST ~7.0'	sp	LAB SAMPLE COLLECTED FROM S-3
		S 4	24	3-4 7-7		MEDIUM STIFF BLACK GRAY CLAY, SOME SAND TO ~12.0', LENSES OF ORANGE BROWN AND GRAY SAND TO ~9.5', MOIST	cl	
50	10	S 5	24	3-4 5-6				LAB SAMPLE COLLECTED FROM S-5
45.71		S 6	24	3-5 6-7		14.5'		
	15					BOTTOM OF BORING 14.5'		CEMENT/BENTONITE GROUT TO SURFACE
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 1-2-90
DATE COMPLETED: 1-2-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
LPD

BORING NO. B-15
SHEET 1 OF 1

300430

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-16

COORDINATES
N 412,930 E 1,913,358
SURFACE EL: 64.89'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	19	7-4 4-4		MEDIUM STIFF, BROWN TO LIGHT BROWN SILT, TRACE SAND, DRY ~2.2'	ml	LAB SAMPLE COLLECTED FROM S-1
60	5	S-2	21	4-7 7-7		MEDIUM DENSE, ORANGE-RED COARSE SAND, TRACE GRAVEL AT ~9.0', WET		
		S-3	12	4-6 25			sp	LAB SAMPLE COLLECTED FROM S-3 Fe STAINING FROM 5.5'-5.75'
		S-4	14	4-7 8-10		9.3'		
	10					MEDIUM STIFF, ORANGE-RED CLAY, MOIST 10.5'	cl	
		S-5	11	7-10 14-18		MEDIUM DENSE, ORANGE-BROWN, COARSE SAND, SOME CLAY, WET		LAB SAMPLE COLLECTED FROM S-5
		S-6	20	6-10 10-14		14.4'	sp	
50	15	S-7	17	6-9 11-13		STIFF, BLACK-GRAY CLAY, MOIST 16.5'	cl	
48.39						BOTTOM OF BORING 16.5'		MW-5 INSTALLED. SEE WELL INSTALLATION SHEETS FOR DETAILS.
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 1-5-90
DATE COMPLETED: 1-5-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH 8.0' DATE/TIME 1-6-90/0850
GWL: DEPTH 3.3' DATE/TIME 3-20-90
DRILLING METHOD: 6 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
LPD

BORING NO. B-16
SHEET 1 OF 1

300431

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-17

COORDINATES
N 412,789 E 1,913,251
SURFACE EL: 62.44'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
60	0	S-1	18	4-2 5-6		MEDIUM STIFF, DARK BROWN SILTY CLAY, TRACE TO SOME FINE SAND AND GRAVEL, MOIST 2.2'	cl	LAB SAMPLE COLLECTED FROM S-1
		S-2	19	6-6 9-10		LOOSE REDDISH BROWN, FINE SAND, TRACE CLAY AND GRAVEL, MOIST 3.5'	sp	
	5	S-3	22	11-14 31		VARVED GRAY CLAY WITH SOME MOTTLED BROWN FINE SAND, MOIST 6.0'	cl	LAB SAMPLE COLLECTED FROM S-3
		S-4	24	2-4 6-7		LOOSE TO MEDIUM DENSE, REDDISH BROWN TO BLACK, MEDIUM SAND, WET 8.5'	sp	
50.44	10	S-5	20	2-5 5-8		STIFF, BLACK-GRAY, CLAY, WET 12.0'	cl	LAB SAMPLE COLLECTED FROM S-5
						BOTTOM OF BORING 12.0'		CEMENT/BENTONITE GROUT TO SURFACE
	15							
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 1-3-90
DATE COMPLETED: 1-3-90
FIELD GEOLOGIST: WCS
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
SLW

BORING NO. B-1
SHEET 1 OF 1

300432

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-18

COORDINATES
N 412,654 E 1,913,144
SURFACE EL: 61.19'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
60	0	S 1	14	5-2 2-3		LOOSE, BROWN TO ORANGE-BROWN, FINE TO MEDIUM SAND, TRACE TO SOME SILT AND COBBLES, GRAVELLY AFTER ~2.0', DRY TO MOIST	sp	LAB SAMPLE COLLECTED FROM S-1
		S 2	12	15-14 21-8		4.8'		
	5	S 3	12	8-7 6-8		MEDIUM STIFF, ORANGE TO REDDISH BROWN CLAY, TRACE SAND, DRY TO MOIST 5.5'	cl	
						MEDIUM STIFF, OLIVE GRAY SILT, TRACE SAND AND CLAY, MOIST 7.0'	ml	LAB SAMPLE COLLECTED FROM S-3
		S 4	20	17-34 27-17		LOOSE TO DENSE DARK ORANGE BROWN TO GRAY-BLACK COARSE SAND, TRACE SILT TO 10.0', MOIST Fe STAINED GRAVEL AT 9.5'	sp	
50	10	S 5	18	3-3 4-4		11.25'		LAB SAMPLE COLLECTED FROM S-5
		S 6	20	3-4 8-8		STIFF, BLACK GRAY CLAY, MOIST		
	15	S 7	16	3-4 7-8			cl	
		S 8	19	4-6 8-4				
	20	S 9	20	4-5 7-7				
40								
	25	S 10	22	6-5 8-4				
	30	S 11	24	4-8 7-7		~33.0'		
30	35					STIFF BLACK GRAY SANDY CLAY/CLAYEY SAND, MOIST TO WET	sc	

PROJECT NO.: 89-595
DATE BEGAN: 1-2-90
DATE COMPLETED: 1-3-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
SLW

BORING NO. B-18
SHEET 1 OF 2

300433

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-18

COORDINATES
N 412,654 E 1,913,144
SURFACE EL: 61.19'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
24.19	35	S 12	22	7-14 21-22		STIFF BLACK GRAY SANDY CLAY/CLAYEY SAND, MOIST TO WET 37.0'	SC	
						BOTTOM OF BORING 37.0'		CEMENT-BENTONITE GROUT TO SURFACE
	40							
	45							
	50							
	55							
	60							
	65							
	70							

PROJECT NO.: 89-595
DATE BEGAN: 1-2-90
DATE COMPLETED: 1-3-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
SLW

300434

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-19

COORDINATES
N 412,570 E 1,913,116
SURFACE EL: 58.14'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	18	3-4 4-4		VERY LOOSE TO MEDIUM DENSE ORANGE BROWN TO ORANGE RED TO BLACK-GRAY, FINE TO COARSE SAND, TRACE CLAY TO 2.0', TRACE SILT 7.5'-7.7', CLAYEY 7.7'-10.6', WET	sp	LAB SAMPLE COLLECTED FROM S-3 AND S-4
		S-2	24	6-9 12-17				
	5	S-3	15	7-14 18				
		S-4	18	13-22 20				
50		S-5	20	1-3 5-5				
	10	S-6	24	3-5 6-7		10.6' STIFF, BLACK GRAY, CLAY, WET	cl	LAB SAMPLE COLLECTED FROM S-6
45.64						12.5' BOTTOM OF BORING 12.5'		MW-6 INSTALLED. SEE WELL INSTALLATION SHEET FOR DETAILS
	15							
	20							
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 1-3-90
DATE COMPLETED: 1-4-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH 1.2' DATE/TIME 3-20-90
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 6 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: TROY BROWN

F-188
SLW

300435

BORING NO. B-19
SHEET 1 OF 1

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-20

COORDINATES
N 412,069 E 1,913,875
SURFACE EL: 67.31'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	14	3-4 4-9		MEDIUM DENSE, ORANGE-RED SAND, SOME SILT AND CLAY, TRACE COBBLES, DRY TO MOIST	sp	
		S-2	12	5-5 7-9				
	5	S-3	11	4-9 11				
		S-4	14	10-14 36				LAB SAMPLE COLLECTED FROM S-3 AND S-4
60						7.2'		
		S-5	10	27-29 30-38		MEDIUM DENSE TO DENSE, ORANGE-RED SANDY GRAVEL/GRAVELLY SAND, TRACE SILT, COBBLES AND BLACK SAND, WET	gw sw	
	10	S-6	12	9-14 6-8				LAB SAMPLE COLLECTED FROM S-6
		S-7	12	10-12 14-18				
	15	S-8	12	5-17 15-19		17.0'		
50						MEDIUM DENSE, ORANGE-BROWN, COARSE SAND, WET 18.0'	sp	
		S-9	12	4-7 4-8		MEDIUM STIFF, ORANGE BROWN, CLAY WET 18.4'	cl	
	20	S-10	15	3-3 4-5		MEDIUM DENSE, BLACK GRAY, SILTY SAND, LENSES OF BLACK SAND AND BLACK GRAY CLAY, MOIST TO WET		
		S-11	15	7-8 7-5			sm	
	25	S-12	18	4-6 7-5		~27.2'		
40								
		S-13	21	4-7 8-9		STIFF TO VERY STIFF BLACK TO BLACK-GRAY CLAY, SANDY WITH TRACE OF COBBLES TO 29.5', WET	cl	
	30	S-14	24	8-11 12-4				
35.81						31.5'		
	35					BOTTOM OF BORING 31.5'		CEMENT-BENTONITE GROUT TO SURFACE

PROJECT NO.: 89-595
DATE BEGAN: 1-6-90
DATE COMPLETED: 1-6-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH ____ DATE/TIME ____
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 4 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
SLW

300436

BORING NO. B-2
SHEET 1 OF 1

Paul C Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-21

COORDINATES
N 412,559 E 1,913,910
SURFACE EL: 66.40'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	18	5-5 5-5	BITUMINOUS ASPHALT 0.2' MEDIUM DENSE, ORANGE-BROWN SILTY SAND, TRACE COBBLES AND GRAVEL, DRY		
		S-2	21	7-12 14-18	SULFUR FROM ~5.8' TO 6.0'	sm	
	5	S-3	19	5-7 12-13	6.0' DENSE, BROWN SAND, LENSES OF TAN AND MAROON CLAY, TRACE GRAVEL AND SILT		
60		S-4	14	3-3 5-7	MOIST TO WET	sw	
	10	S-5	6	5-5 2-3	12.2' VERY SOFT, ORANGE-REDDISH BROWN CLAY, WET 12.8'	cl	
		S-6	16	2-1 1-2	VERY LOOSE TO LOOSE, ORANGE-BROWN TO BROWN, SILTY MEDIUM TO FINE SAND, TRACE CLAY, WET		
	15	S-7	11	1-1 1-4		sm	
50					20.3'		
	20	S-8	15	4-5 9-9	MEDIUM DENSE, BLACK CLAYEY SAND, WET 22.2'	sc	
41.90		S-9	22	3-2 3-5	STIFF, BLACK GRAY, CLAY 24.5'	cl	
	25				BOTTOM OF BORING 24.5'		MW-1 INSTALLED. SEE WELL INSTALLATION FOR DETAILS
	30						
	35						

PROJECT NO.: 89-595
DATE BEGAN: 1-7-90
DATE COMPLETED: 1-7-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH 4.3' DATE/TIME 3-20-90
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 6 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
SLW

300437

BORING NO. B-21
SHEET 1 OF 1

Paul C. Rizzo Associates, Inc.
CONSULTANTS

LOG OF BORING NO. B-22

COORDINATES
N 412,297 E 1,913,715
SURFACE EL: 69.07'

ELEV. (FEET M.S.L.)	DEPTH (FEET)	SAMPLE NO. AND TYPE	SAMPLE RECOVERY (IN.)	BLOWS PER 6-INCH INCREMENTS	PROFILE	DESCRIPTION	USCS SYMBOL	REMARKS
	0	S-1	17	4-4 7-8		MEDIUM STIFF, TAN BROWN, SANDY SILT TO SILT, DRY 3.0'	ml	
		S-2	21	5-8 10-14		MEDIUM DENSE TO DENSE, ORANGE, COARSE SAND, TRACE SILT AND COBBLES, DRY TO MOIST, WET AT 10.0'		
	5	S-3	18	6-7 7-4			sw	
60		S-4	12	2-20 22-28				
	10	S-5	11	10-10 12-18		12.75'		
		S-6	17	18-17 20-21		DENSE, OLIVE GRAY, FINE SAND, TRACE CLAY, WET 16.0'	sp	OIL-LIKE SHEEN ON SAMPLER
	15	S-7	18	6-9 17-18		DENSE, ORANGE BROWN, SILTY SAND, WET 17.7'	sm	HNU READING ~5 ppm
50		S-8	18	2-4 8-10		LOOSE, BLACK GRAY, CLAYEY SAND 18.5'	sc	
49.57						STIFF BLACK-GRAY CLAY 19.5'	cl	
	20					BOTTOM OF BORING 19.5'		MW-2 INSTALLED. SEE WELL INSTALLATION SHEET FOR DETAILS
	25							
	30							
	35							

PROJECT NO.: 89-595
DATE BEGAN: 1-7-90
DATE COMPLETED: 1-7-90
FIELD GEOLOGIST: AHT
CHECKED BY: WJJ

GWL: DEPTH 7.9' DATE/TIME 3-20-90
GWL: DEPTH ____ DATE/TIME ____
DRILLING METHOD: 6 1/4" I.D. HSA WITH SPT USING CME-55 DRILL RIG

NOTES:
DRILLING CO: MATHES DRILLING
DRILLER: BUTCH HITZELBERGER
HELPER: BILL LIGHTNER

F-188
SLW

BORING NO. B-22
SHEET 1 OF 1

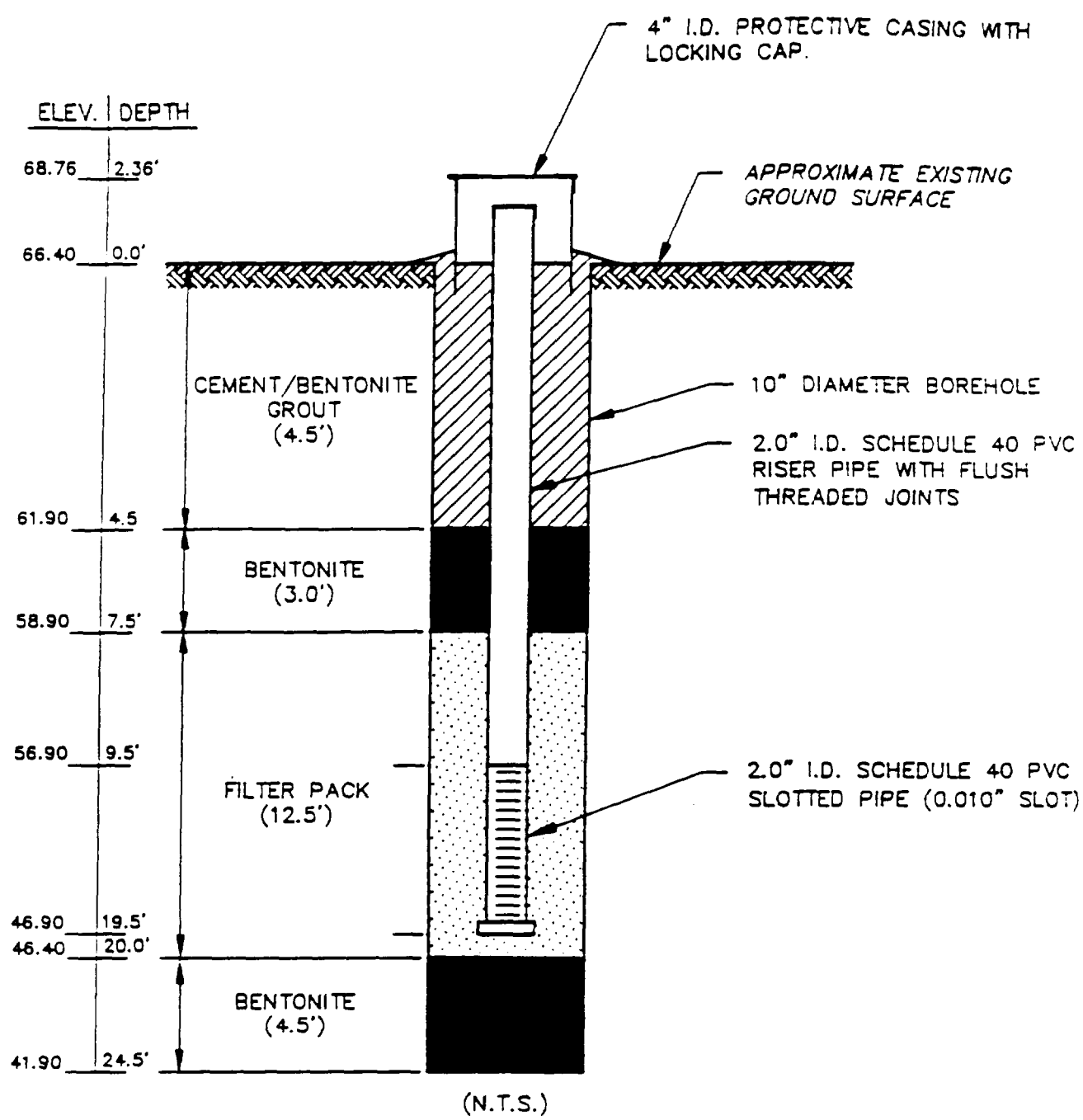
300438

APPENDIX C

APPENDIX C

WELL INSTALLATION DETAILS

DRAWN BY | T. Jordan 4-20-90
CHECKED BY / APPROVED BY | 5-8-90 / 5-8-90
DRAWING NUMBER | 89 595 A16



NOTE:

1. SEE FIGURE 10 FOR PLAN LOCATION OF MONITORING WELL
2. ELEVATION DATUM IS MEAN SEA LEVEL (M.S.L.)
3. DEPTH DATUM IS GROUND SURFACE

FIGURE B-1

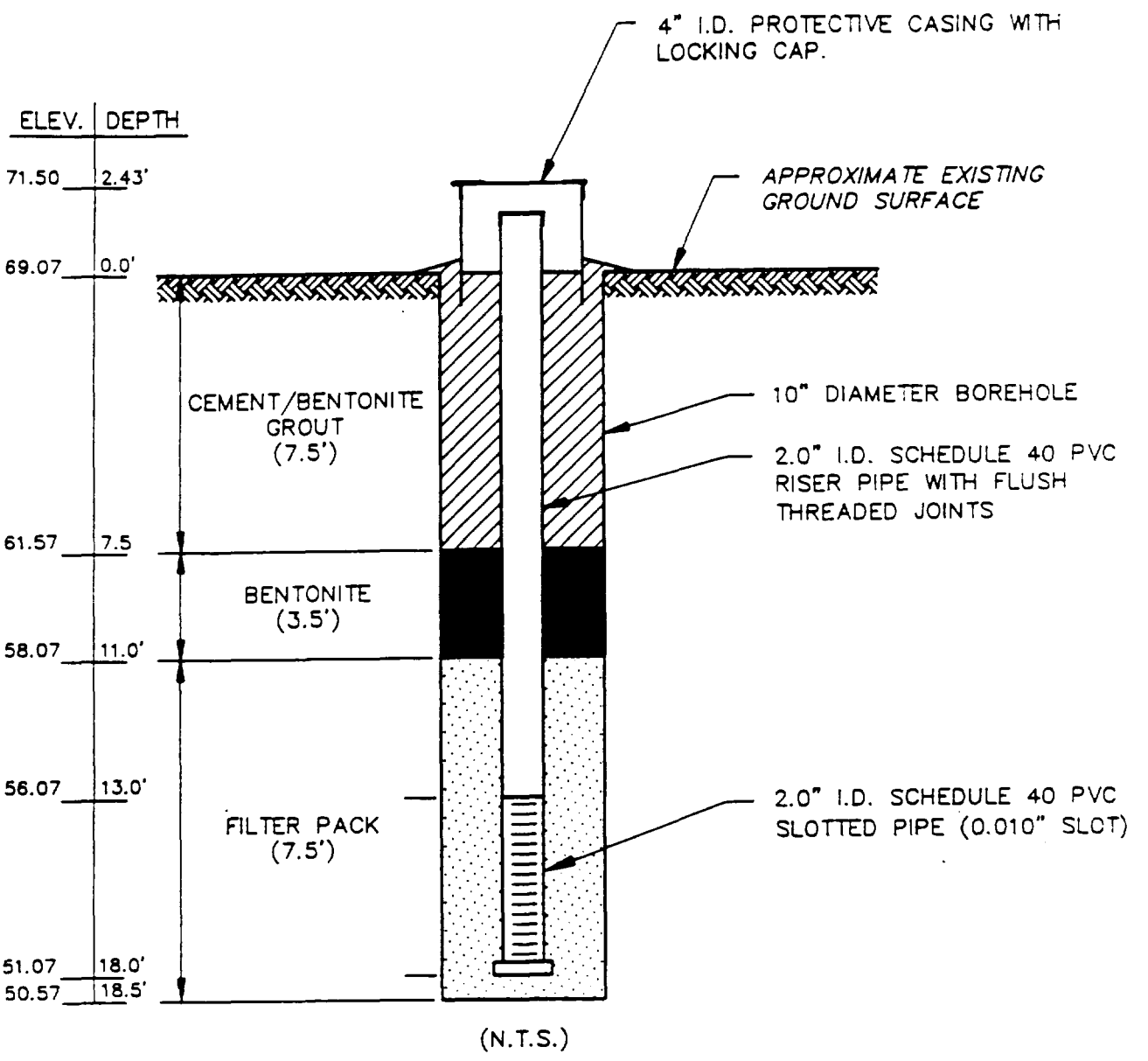
MONITORING WELL MW-1
INSTALLATION DETAILS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc
CONSULTANTS

DRAWN BY	T.Jordan 4-20-90	CHECKED BY	JTD	5-8-90	DRAWING NUMBER	89-595-A17
		APPROVED BY	JTD	5-8-90		



NOTE:

1. SEE FIGURE 10 FOR PLAN LOCATION OF MONITORING WELL
2. ELEVATION DATUM IS MEAN SEA LEVEL (M.S.L.)
3. DEPTH DATUM IS GROUND SURFACE

FIGURE B-2

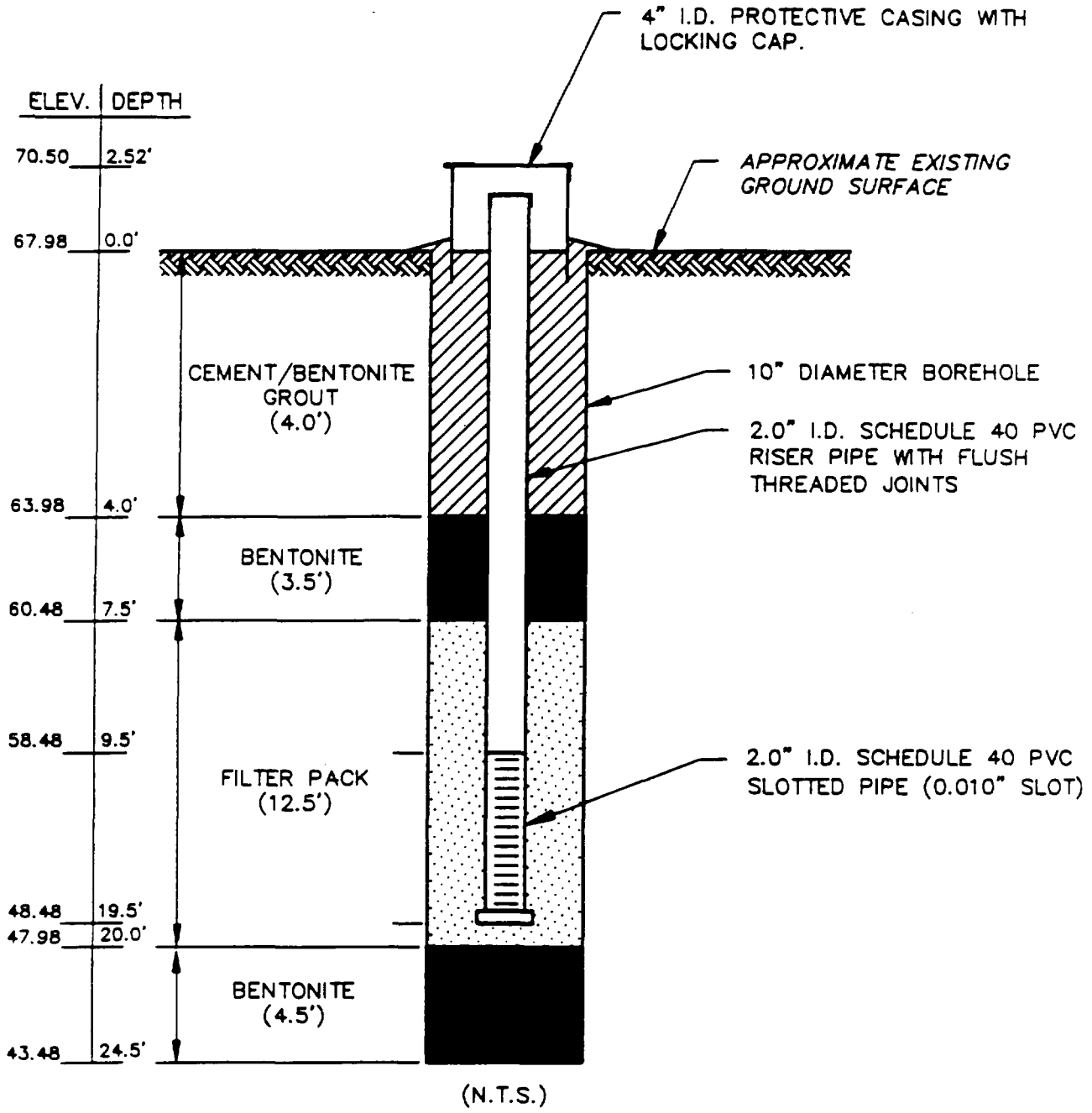
MONITORING WELL MW-2
INSTALLATION DETAILS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

DRAWN BY	CHECKED BY	DRAWING NUMBER
T. Jordan 4-20-90	APPROVED BY	89-595-A18
JTO	JTO	5-8-10
		5-8-10



NOTE:

1. SEE FIGURE 10 FOR PLAN LOCATION OF MONITORING WELL
2. ELEVATION DATUM IS MEAN SEA LEVEL (M.S.L.)
3. DEPTH DATUM IS GROUND SURFACE

FIGURE B-3

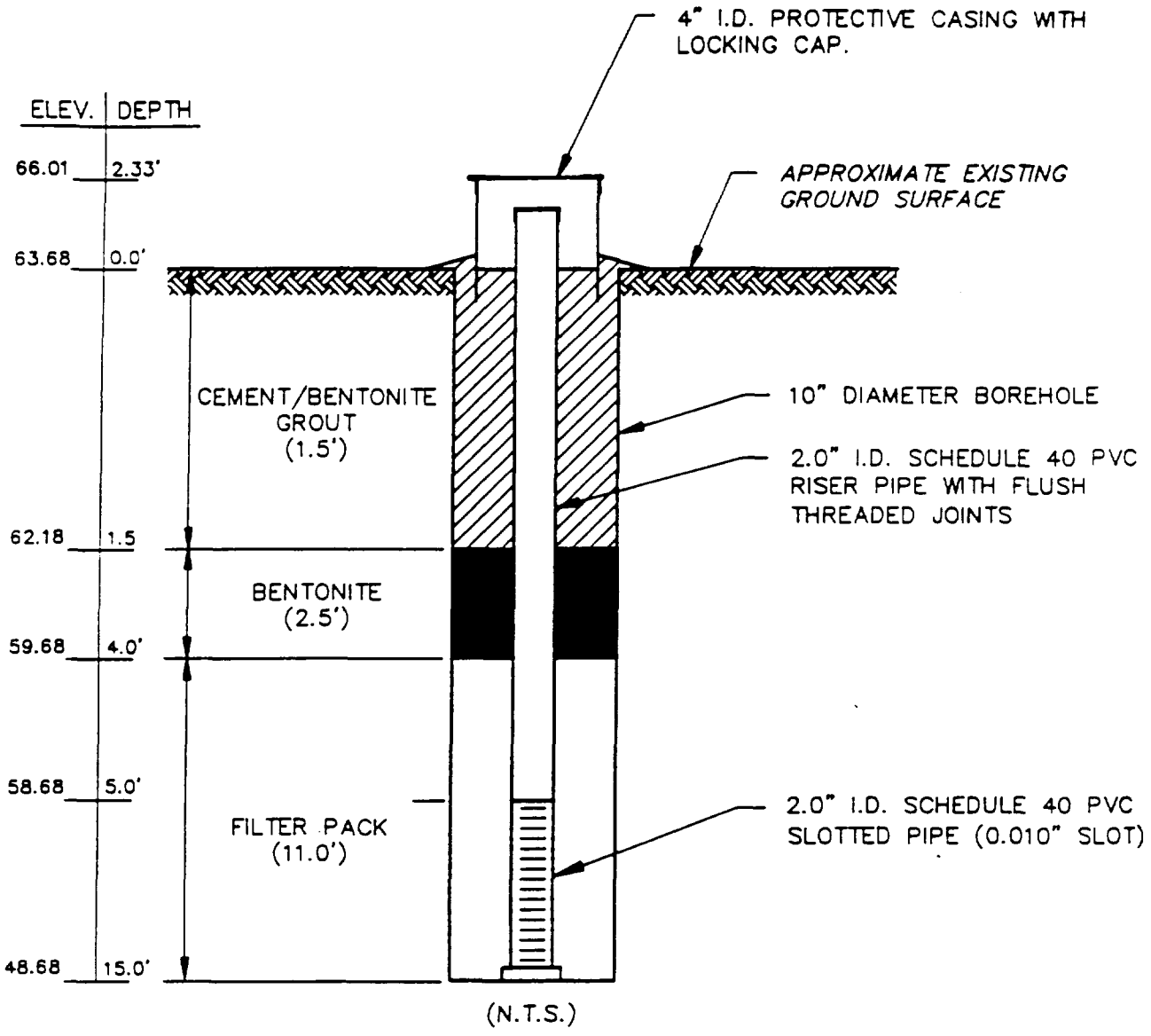
MONITORING WELL MW-3
INSTALLATION DETAILS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

DRAWN BY	T.Jordan 4-20-90
CHECKED BY	JTO 5-8-90
APPROVED BY	JTO 5-8-90
DRAWING NUMBER	89-595-A19



NOTE:

1. SEE FIGURE 10 FOR PLAN LOCATION OF MONITORING WELL
2. ELEVATION DATUM IS MEAN SEA LEVEL (M.S.L.)
3. DEPTH DATUM IS GROUND SURFACE

FIGURE B-4

MONITORING WELL MW-4
INSTALLATION DETAILS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

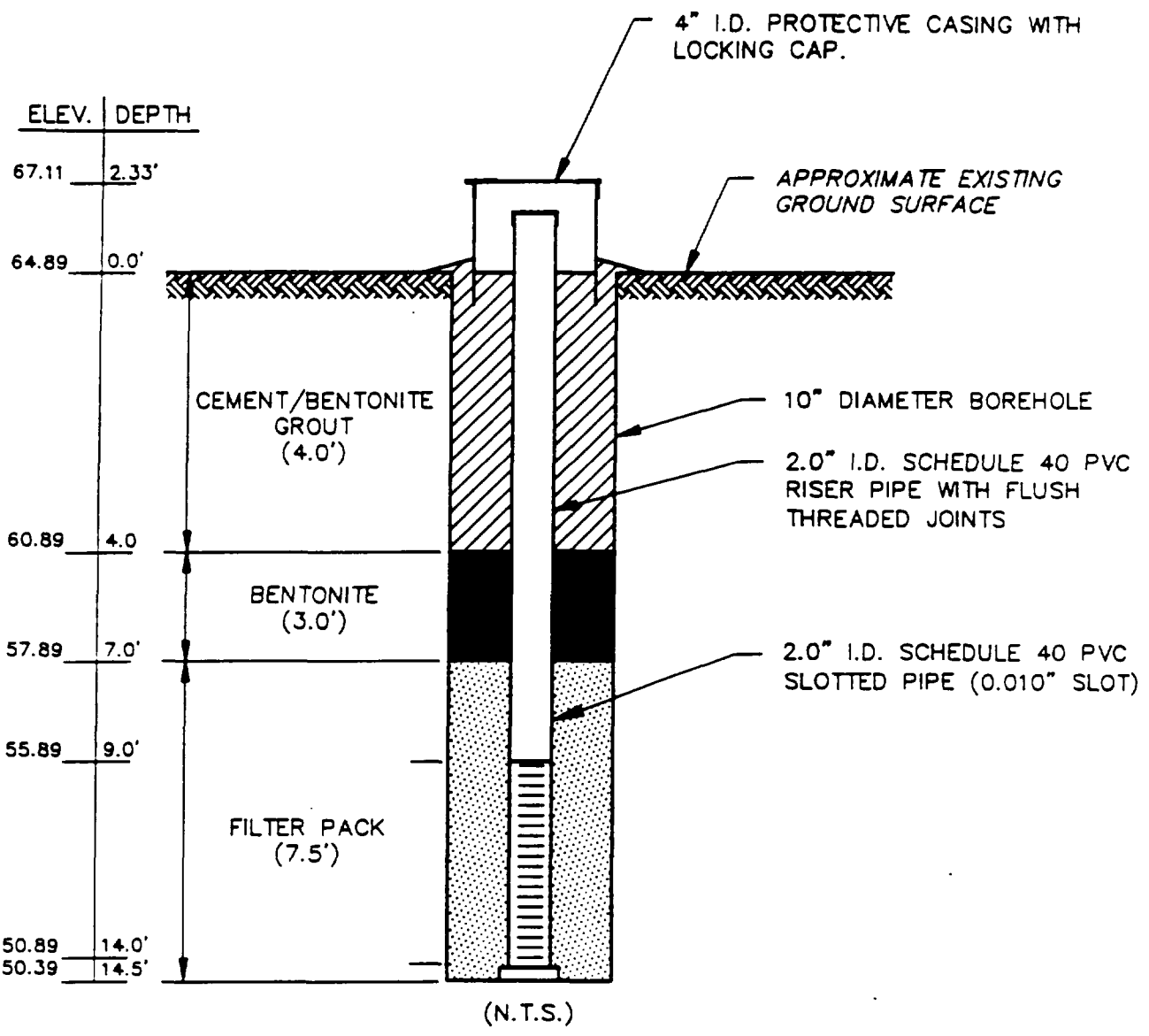
PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

390443

DRAWING NUMBER	89-595-A20
	5-8-90
	5-8-90
	JTD
	JTD
CHECKED BY	
APPROVED BY	
	T. Jordan
	4-20-90
DRAWN BY	



NOTE:

1. SEE FIGURE 10 FOR PLAN LOCATION OF MONITORING WELL
2. ELEVATION DATUM IS MEAN SEA LEVEL (M.S.L.)
3. DEPTH DATUM IS GROUND SURFACE

FIGURE B-5

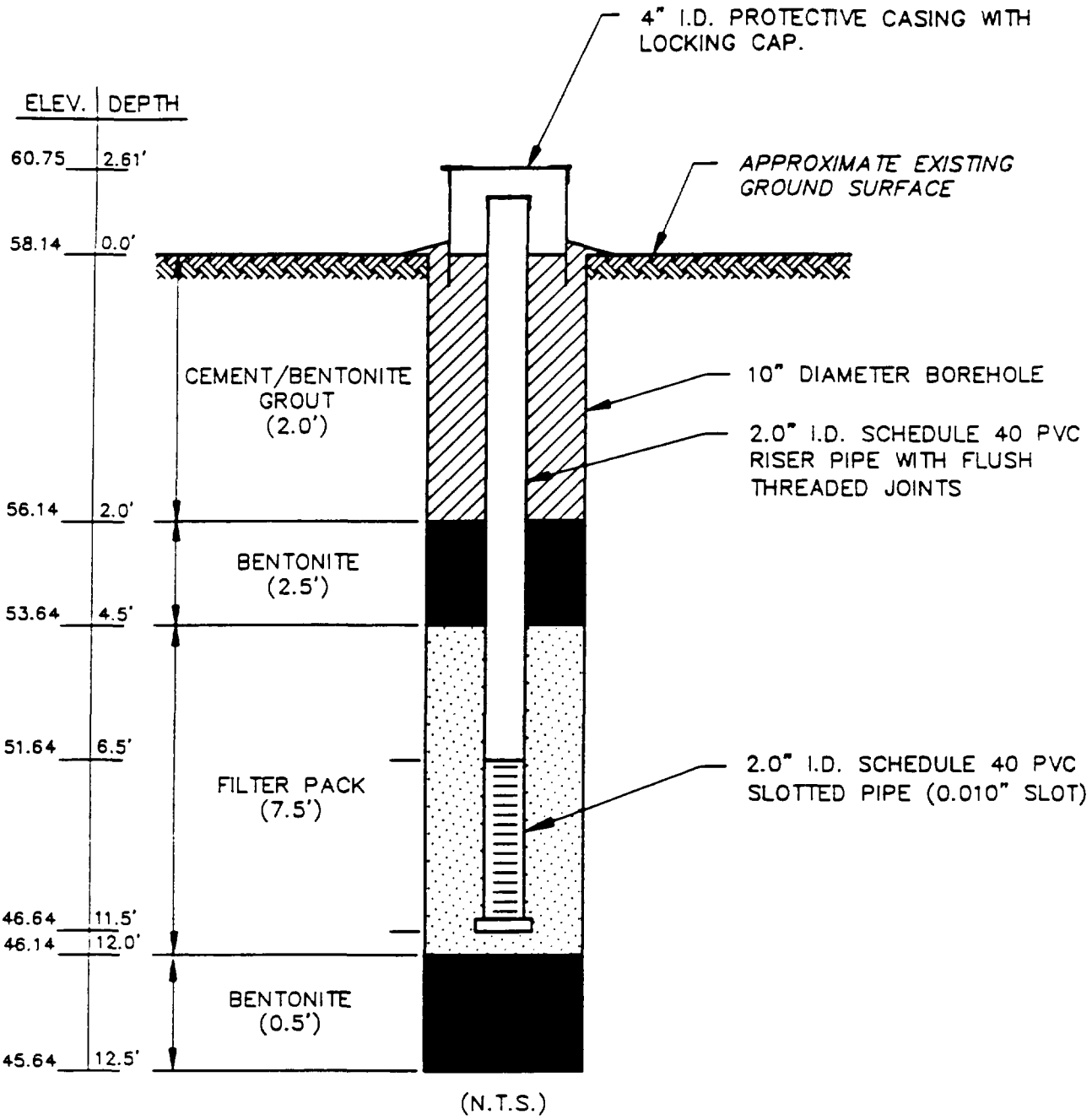
MONITORING WELL MW-5
INSTALLATION DETAILS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

DRAWN BY	T. Jordan 4-20-90
CHECKED BY	JTO JTO
APPROVED BY	5-8-90 5-8-90
DRAWING NUMBER	89-595-A21



NOTE:

1. SEE FIGURE 10 FOR PLAN LOCATION OF MONITORING WELL
2. ELEVATION DATUM IS MEAN SEA LEVEL (M.S.L.)
3. DEPTH DATUM IS GROUND SURFACE

FIGURE B-6

MONITORING WELL MW-6
INSTALLATION DETAILS
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

PREPARED FOR

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS

300444

APPENDIX D

SAMPLE CHAIN-OF-CUSTODY FORMS

PAGE 1 OF 1

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Quick

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1 Liter Glass	40 ml Glass	500 ml Plastic	125 ml Plastic			COMMENTS
B14/S-3	12/13/89	1520	S	[redacted] 5-7'	1/2 qt.	1	✓						WEEK 1 samples
B-2/S-1	12/14/89	1230	S	0-2'	1/4 qt.	1	✓						Group B
B-14/S-5	12/13/89	1530	S	10-12'	1000 ml	1	✓						analysis
B-2/S-5	12/14/89	1420	S	10-12'	500 ml	1	✓						
B-13/S-3	12/13/89	1215	S	5-7'	500 ml	1	✓						
B-13/S-5	12/13/89	1240	S	10-12'	1000 ml	1	✓						
TRIP BLANK 002				TB 002	40 ml	1		/					
B-2A/S1	12/12/89	0852	S	5-6.5'	1620 ml	5	2		1	2			GROUP A Analysis
B3/S1	12/15/89	1050	S	0-2'	500 ml	1	/						group B and
B3/S3	12/15/89	1105	S	5-7'	500 ml	1	/						group B and
B3/S5	12/15/89	1120	S	10-12'	500 ml	1	/						group B and

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
Bill Quick	12/15/89 1:50	Otis Williams	Otis Williams	12-15-89 17:10	Tom Mills
Tom Mills	12/15/89 17:20				

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY

Distribution-Original accompanies shipment, copy to project files.

SAMPLE TYPE: W WATER, S SOLID, A-AIR, O-OTHER

LABORATORY: Phillip Ecenbrook LLI

3011447

129

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith

COMMENTS: WEEK 1 Samples

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000 ml Jars	500 ml Jars	120 ml Jars	40 ml Jars			COMMENTS
B7/S5-C	12·17·89	1535	S	10-12'	500 ml	1	1						LAB Duplicate, Group B anal
B7/S5-A	12·17·89	1535	S	10-12'	500 ml	1	1						Group B anal.
B9/S5	12·17·89	1140	S	10-12'	500 ml	1	1						Group B anal.
B9/S3	12·17·89	1115	S	5-7'	500 ml	1	1						Group B anal.
B7/S3A	12·17·89	1500	S	5-7'	1720 ml	5	2	1	2				Group A anal.
Trip Blank 003	12·4·89		W	Trip Blank	40 ml	1				1			Trip Blank

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	12/18/89 1219	Andrew H. Thalheimer	[illegible]	12-18-89 1435	Tim Muth
Andrew H. Thalheimer	12/18/89 1330	[illegible]	Tim Muth	12-18-89 [illegible]	Phillip Eslenshade

RELINQUISHED BY (SIGNATURE): DATE/TIME: RECEIVED BY (SIGNATURE):

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution—Original accompanies shipment, copy to project files.

LABORATORY: Lancaster Labs Inc

SAMPLE TYPE: W-WATER, S-SOLID, A-AIR, O-OTHER

300448

Acct #

141239

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO: 3979

PROJECT NAME: RCC

SAMPLER(S) (SIGNATURE): C. W. Smith / Andrew H. Rathheiser

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	Run 1 1000 ml	500 ml	120 ml				COMMENTS
													Week 2 Samples
WEEKEND BLANK 004	12/4/89	-	W		40 ml	1	1						TRIP BLANK
B4/S5	12-19-89	1645	S	10-12'	1000 ml	1		1					Group B anal
B4/S1	12-19-89	1615	S	0-2'	1000 ml	1		1					"
B12/S5	12-19-89	1915	S	10-12'	1000 ml	1		1					"
B12/S3	12-19-89	1400	S	5-7'	1000 ml	1		1					"
B4/S3	12-19-89	1630	S	5-7'	1000 ml	1		1					"
B8/S3A	12-20-89	1436	S	5-7'	2740 ml	5		2	1	2			Group A anal (split w/EPA)
B8/S5	12-20-89	1511	S	10-12'	1000 ml	1		1					Group B anal.
B10/S3A	12-21-89	1200	S	5-8'	2740 ml	5		2	1	2			Group A anal
B10/S3B	12-21-89	1200	S	5-8'	2740 ml	5		2	1	2			Group A anal - (AB Duplicate)
B9/S6A	12-21-89	1215	S	10-12'	1000 ml	1		1					Group B anal (split w/EPA)

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
C. W. Smith	12-21-89 2:00	Otto D'Alessandro	Otto D'Alessandro	12-21-89 14:50	[illegible]
[illegible]	12-21-89 12:50	[illegible]			

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

LABORATORY: Lancaster Labs.

Distribution-Original accompanies shipment, copy to project files.

SAMPLE TYPE:
W-WATER, S-SOLID, A-AIR, O-OTHER

301140

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Quick / Andrew N. Thalheimer

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000ml	40ml VOA					COMMENTS
													Week 3 samples
B15/S3	1-2-90	1250	S	5-7'	1000ml	1	✓						Group B anal
B-15/S5	1-2-90	1300	S	10-12'	1000ml	1	✓						"
B-18/S1	1-2-90	1600	S	0-2'	1000ml	1	✓						"
B-18/S3	1-2-90	1630	S	5-7'	1000ml	1	✓						"
B-18/S5	1-3-90	0900	S	10-12'	1000ml	1	✓						"
TRIP BLANK 005	12-4-89	—	W	—	40ml	1		✓					TRIP BLANK

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Quick	1-3-90 1105	Otis DeMarco	Otis DeMarco	1-3-90 12:2[illegible]	Jim Mull
Jim Mull	1-3-90 14:30				

REMARKS:

LABORATORY:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution—Original accompanies shipment, copy to project files.

SAMPLE TYPE: W WATER, S-SOLID, A-AIR, O-OTHER

cct 3415

Used 3415 # 14761, -50

PAGE 1 OF

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith / Andrew N. Tolkemitt

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000 ml	120 ml	90 ml	40 ml			COMMENTS
													Week 3 Samples
B17/S1	1.3.90	1400	S	0-2'	1000ml	1	1						Group B anal.
B17/S3A	1.3.90	1420	S	5-7'	1000ml	1	1						Group B anal.
B17/S3B	1.3.90	1420	S	5-7'	1000ml	1	1						Group B anal. (LAB Duplicate)
B17/S5	1.3.90	1435	S	10-12'	1000ml	1	1						Group B anal.
B12/S3A	1.4.90	0830	S	4-7'	2620ml	5	2	2	1				Group A anal.
B19/S6	1.4.90	0900	S	10-12'	1000ml	1	1						Group B anal.
B11/S3A	1.4.90	1430	S	4-7'	2620ml	5	2	2	1				Group A anal.
B11/S3B	1.4.90	1430	S	4-7'	2620ml	5	2	2	1				Group A anal.
B11/S6	1.4.90	1500	S	10-12'	1000ml	1	1						Group B anal.
Trip Blank 0006	12.9.89	—	W	LAB	40ml	1				1			Trip Blank
B1/S6	1.5.90	1035	S	10-12'	1000ml	1	1						Group B anal
B1/S3A	1.5.90	1015	S	4-7'	2620	5	2	2	1				Group A anal

RELINQUISHED BY (SIGNATURE)	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	1/5/90 1130	Otto DeMarco	Otto DeMarco	1/5/90 1530	Jim Mark
Jim Mark	1-5-90 1713	Phillip Eberenbrode			
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	REMARKS:		NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution–Original accompanies shipment, copy to project files.

SAMPLE TYPE: W–WATER, S–SOLID, A–AIR, O–OTHER

LABORATORY:

3005751

F–129

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595
PROJECT NAME: PFG
SAMPLER(S) (SIGNATURE): Charles H. Ballweber / Bill Smith

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000 ml	500 ml	120 ml	40 ml			COMMENTS
B16/S1	1-5-90	1550	S	0-2'	1000 ml	1	1						Group B anal
B16/S3A	1-5-90	1605	S	5-7'	1000 ml	1	1						Group B anal.
B16/S3B	1-5-90	1605	S	5-7'	1000 ml	1	1						Group B anal
B16/S5	1-5-90	1615	S	10-12'	1000 ml	1	1						Group B anal
B20/S3A	1-6-90	1305	S	4-7'	2740 ml	5	2	1	2				Group A anal
B20/S6	1-6-90	1330	S	10-12'	1000 ml	1	1						Group B anal
SS-1	1-7-90	1220	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-2	1-7-90	1230	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-3A	1-7-90	1235	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-3B	1-7-90	1235	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-4A	1-7-90	1237	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-4B	1-7-90	1237	S	0.75-1'	1000 ml	1	1						Group B anal (LAB Duplicate)
TRIP BLANK 007	12-4-89	-	W		40 ml	1				1			TRIP BLANK (lab supplied)

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
Bill Smith	1/8/90 1105	Elt Hardman 1:05 1/8/90	Elt Hardman 1/9/90	1/9/90 1500	Phillip Cooperwhite

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution-Original accompanies shipment, copy to project files.

SAMPLE TYPE: W WATER, S- SOLID, A-AIR, O-OTHER

LABORATORY: LANCASTER LABS

300451A

PAGE 1 OF 2

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 87-595
PROJECT NAME: PPG
SAMPLER(S) (SIGNATURE): Bill Quick

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	TAL Metals (FILTERED) 1000 ml/1	TAL Metals (UNFILTERED) 1000 ml/1	Cyanide 1000 ml/1	TCL Test, TCL Lab, Libby 1000 ml/1	Lancaster (Several) 250 ml/1	VOA 40 ml/3	COMMENTS
													Week 4 samples
GW-1	1-8-90	1600	W	MW 6	7580 ml	11	1	1	1	4	2	2	Group C anal.
GW-2	1-8-90	1620	W	MW-5	7580 ml	11	1	1	1	4	2	2	Group C anal
TRIP BLANK 008	SEE COMMENTS	—	W	LAB SUPPLIED	2330 ml	5	1			1	1	2	lab supplied VOA collected on 1-5-90 Trip blank for 1-5-90 Calamity and TCL Test, collected on 1-8-90
~~EB-1~~ WG	~~1-9-90~~	~~1030~~	~~3~~	WG	~~3500~~ 5	WG							
GW-3A	1-9-90	1315	W	MW-1	7580 ml	11	1	1	1	4	2	2	Group C anal.
GW-3B	1-9-90	1320	W	MW-1D	22,740 ml	33	3	3	3	12	6	6	Group C anal (Lancs Dup)
TANK Water	1-9-90	1255	W	water tank	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-4	1-9-90	1500	W	MW-3	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-5	1-9-90	1630	W	MW-2	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-6	1-9-90	1630	W	MW-2D	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-7	1-9-90	1830	W	MW-4	7580 ml	11	1	1	1	4	2	2	Group C anal
EB-2	1-10-90	0915	W	3" ϕ SPLIT SPOON	7580 ml	11	1	1	1	4	2	2	Group C anal.
EB-1	1-10-90	1300	W	BAILER	7580	11	1	1	1	4	2	2	Group C anal

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
Bill Quick	1-10-90 1120	Otis D Mauer	Otis D Mauer	1-10-90 1430	Tim Mills
Tim Mills	1-10-90 1720	Philip Oberstadt			

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution-Original accompanies shipment, copy to project files.

SAMPLE TYPE: W-WATER, S-SOLID, A-AIR, O-OTHER

LABORATORY: LANCASTER

30104452

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CON-TAINERS	1000cc TCL [illegible]	1000cc TAL [illegible]	500cc TCL [illegible]	500cc [illegible]			COMMENTS
													Week 4 samples
SEW-1	1-9-90	1030	S	STREAM NEAR B-9	3500	5	1	1	2	1			GROUP A ANAL.

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	1-10-90 11:20	Otto DiMarco	Otto DiMarco	1-10-90 14:30	Tom Miller
RELINQUISHED BY (SIGNATURE): Tom Miller	DATE/TIME: 1-10-90 17:20	RECEIVED BY (SIGNATURE): P. Esbenshade	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	REMARKS:		

Distribution–Original accompanies shipment, copy to project files.

SAMPLE TYPE: W–WATER, S–SOLID, A–AIR, O–OTHER

LABORATORY: LANCASTER

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

F-129

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